

AMERICAN BEE JOURNAL

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American Bee Journal

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1 1/2	holding 24 sections, 4 1/4 x 1 1/2, showing 4	1 90	17 00
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Number and description	Nld	In flat, with 3-in. glass			With 2 in. glass 100
		1	10	100	
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Vol. LVI.—No. 9

HAMILTON, ILL., SEPTEMBER, 1916

MONTHLY, \$1.00 A YEAR

PACKING BIG APIARIES FOR WINTER

A Simple Method that May Be of Use Where Packing of Some Sort is Required and Time is Limited

MANY beekeepers object to out-of-door wintering because they think that too much labor is necessary to properly pack the bees. Since extensive honey producers who practice wintering on the summer stands have systems by means of which they are able to pack the bees as easily as they can be placed in the cellar, an article describing such a system somewhat in detail seems timely. While the particular system described in this article may not be suited to the conditions of the extreme north, it is well adapted to localities where the bees have frequent opportunity for flight. Where more careful packing is necessary, as in Canada and the northern United States, the same method of gathering leaves may be used. Such modifications as are necessary to meet different climatic conditions will readily suggest themselves.

The pictures with this article are nearly all taken in the Dadant apiaries where nearly 600 colonies are wintered on the summer stands. It should be remembered that the Dadant frame is $2\frac{1}{2}$ inches deeper than the Langstroth frame, and that a deep frame is considered an advantage in out-of-door wintering. However, if there are plenty of stores and a deep bottom to provide clustering space under the frames, bees will winter very well outside on Langstroth frames.

The first essential in preparing a large apiary for outside wintering is an abundance of some cheap packing material. For this purpose, leaves serve as well as anything and can usually be obtained at little cost. In order to handle the leaves economically nets must be provided in which to carry them from place to place. In the Dadant apiaries nets are still used which were first made by the late Charles Dadant. When empty they somewhat resemble a large hammock. They are about six feet square, with meshes of about four inches and are made of heavy fish-cord. A net full of leaves

will pack four or five colonies, and a large hay-rack will carry perhaps 25 filled nets, or enough to pack about 100 colonies.

The first operation is to lay the nets flat on the ground and stake down the corners. With hand rakes, the leaves are piled on the net as high as possible. The corners are then taken up and fastened together, making a big bundle as shown in Fig. 1. As fast as the nets are filled they are corded in big piles, and if to be left for future use are covered with a canvas to prevent being wet by rain. (Fig. 2). If the apiary is situated in the woods where the leaves are gathered they can be used as raked, but otherwise it will be necessary to haul them to the apiary as shown in Fig. 3. Fifteen filled nets are piled on this wagon with strips across the box to serve the purpose of a rack.

The cover picture shows how the automobile is utilized for carrying smaller quantities of leaves. The five nets shown in the picture contain enough leaves to keep the men packing until the slower moving wagon or truck reaches the outyard.

The nets last many years if properly cared for. Some made by the elder Dadant 25 or 30 years ago are still in use. If purchased in the market they cost about \$1.25 each, and enough should be provided for a full day's operations.

In the Dadant apiaries straw mats are used over the brood-frames as shown in Fig. 5. When the packing begins the first operation is to remove the oil-cloth from the top of the frames and replace it with the mat. Care is used to see that a bee-space is provided between the frames and the mat to per-



FIG. 1.—A NET FULL OF LEAVES

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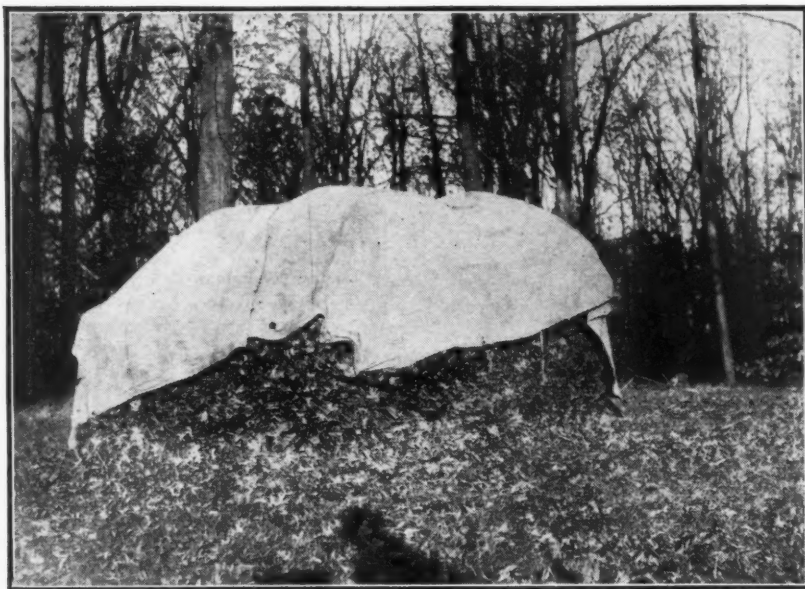


FIG. 2.—LEAVES ARE CORDED IN BIG PILES

mit the bees to move from one frame to another. If burr combs are not present to serve this purpose a small stick is laid across the frames before the mat is put in place. The big cover is then filled with leaves and placed on the hives, as shown in Fig. 6. In practice it is found that four men can work together with a minimum loss of time. Two men go ahead and place the mats and fill the covers. These are followed by two others who pack the hives on the outside. (Fig. 7.)

For holding the outside packing a small strip of woven wire is used (Fig. 8) This encircles the hive as shown in Fig. 8, leaving the front open. Fig. 9 shows the final operation of packing and Fig. 10 shows the hive snug for winter.

With this system the straw mat and super of leaves absorb the moisture that would otherwise condense within the hive. In ordinary winters the bees

come through in most excellent condition. In winters when extreme cold prevails for long periods of time, much depends upon the quality of stores. If care is used to see that only good quality honey or sugar syrup is present in the hive, and that no honey-dew or poor honey is left for the winter food supply, the bees will withstand a surprising amount of cold and come through nicely. A combination of poor stores and extreme cold is likely to prove disastrous by any method of

large cellars would be required to furnish sufficient storage room for cellar wintering. The interest on the money necessary to build seven such cellars would more than pay all the cost of preparing the bees for winter by the packing plan, leaving capital free for use otherwise and saving depreciation. Thirty-five years of experience in wintering large numbers of bees by this method offers convincing evidence that for this climate no better results are likely to be obtained by any plan yet made public.

While this method is entirely satisfactory for this latitude and southward, we would hardly recommend it for northern latitudes. Farther north more packing is desirable and an outside winter case is very satisfactory. This adds somewhat to the expense.

Wintering in the West

BY WESLEY FOSTER.

It has been said that we have no wintering troubles here, and it is partly true, although we do lose 10 percent of our bees every winter. But we also lose 10 percent of our bees from swarming and nearly as much from bee diseases. If we saved all of our colonies that we now lose from disease and in wintering, and also saved all swarms that issue and abscond, we would have to either buy many new hives each year or we would have to learn how to preserve the full strength of our colonies in the hives that we have, and keep them constantly at work.

If the swarming will balance the losses we are about even, but not quite.



FIG. 5.—STRAW MATS ARE PLACED DIRECTLY OVER THE BROOD-FRAMES



FIG. 3.—A WAGON LOAD OF LEAVES READY TO GO TO THE OUTYARD

wintering.

Four men will gather the leaves and pack about 100 colonies in a day. If the weather is favorable a force of four men pack the entire 600 colonies in the seven Dadant apiaries in one week. It is doubtful whether they could be prepared for winter in shorter time by any other method. Their large hives when full of stores are very heavy and

The ideal condition is freedom from losses in swarming, disease and wintering. This may be done, and is being done, to quite a large extent by a few.

We can winter colonies well in 2-story 8-frame hives, so why not unite all colonies headed by old queens with those colonies having young ones? This will give us the next spring plenty of extra hives for the increase we may

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FIG. 6.—THE BIG COVER IS FILLED WITH LEAVES AND PLACED ON HIVE

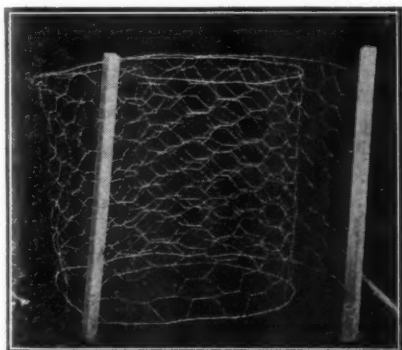


FIG. 8.—WIRE USED TO HOLD OUTSIDE PACKING

make or have forced upon us.

I have tried this, and know that large 2-story hives with young vigorous queens are heavy honey gatherers. Another experiment that was tried on five colonies and worked out well was to divide five normal single-story colonies at the close of the honey flow. Each new division was given a young queen and these 4-frame nuclei were wintered in 10-frame hives, two in each one. The following spring each of these nuclei was equal in bees and vigor to the average of my single-story colonies that had not been divided. Of course, I had to add honey and combs in the spring, but the experiment was an interesting one. This plan probably would not work at all unless the season was a normal one. The colonies were all wintered on the summer stands.

In the Rocky Mountain region, where the winters are comparatively dry and the temperature not severe, we will undoubtedly waste our time in trying to obviate winter losses by wintering in cellars, in packs, or double-walled hives.

This does not refer to Wyoming, Montana or Idaho, where the winters are either more severe or the atmosphere not so dry as in Colorado. For Colorado, Utah, Nevada, New Mexico, parts of Wyoming and Montana, the wintering problem cannot be helped by packing. Let us look to having young queens, sufficient stores of best quality and protected locations, with our hives so placed that the combs and bees will remain dry, and the winter loss will be very slight.

Colonies that have bred heavily nearly all season, or those where the queen has had the run of several ex-

tracting chambers are almost sure to perish unless requeened with young queens in August or September. Such a queen that has done excellent work during a season rarely is superseded and she is very apt to die in the fall or winter.

I have several rows of missing hives in my apiaries that are mute testimonies to the fact that these best colonies in extracted-honey production will not requeen themselves where their queen begins to fail. The bees may take her slackening in egg laying to be but the normal let up of the season. Such a queen does not come back to fall breeding and the colony perishes before spring.

The desired condition in the Rocky Mountain country is to winter every normal colony, and this is being done by many beekeepers right along. We do have unfavorable conditions, but the exceptions prove the rule. Colonies wintered in packs, double-walled hives or in cellars, do not winter so well as those colonies left on the summer stands where the location is favorable and where the honey is of good quality and the queen a young one.

One of our troubles in wintering is from inferior fall honey, and we can get a good percentage of such honey stored in shallow extracting combs placed on the hives at the close of the season. These may be removed during the winter and replaced on the hives again in the spring when the bees can use it in breeding.

Our winter losses largely occur from easily remedied troubles. We do not protect our hives from the winter winds; we can so easily keep the hives dry, but we neglect it. Our queens appear to be all right until the colony dies of queenlessness; foulbrood is so easily controlled that we wake up after a colony has been robbed out; bees need so much ventilation, and we let a colony go a month or more in an out-yard with no cover on it. Our out-apiary fences need repairing, and cattle



FIG. 7.—TWO MEN FOLLOW AND PACK HIVES ON THE OUTSIDE

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get in among the hives, disturbing the bees and causing loss. These causes of winter loss may not be worth while mentioning in an article on wintering, but they are the things that cause the bulk of our losses.

We lose something every winter from thieves stealing honey from colonies until they either starve or die from exposure caused by lack of combs in the cluster.

There is one condition where the advocate of more protection might score a point, and that is when we have a month of zero weather and some of our normal colonies perish. We should have some accurate data on the losses from this cause in the Rocky Mountain region. If the expense of more protection will not be more than the losses suffered we should know it. The majority of beekeepers here think that the losses are less than the expense of more protection would come to. Are they right?

Some of our most successful beemen have even given up trying to winter bees in their locations and fill their hives with bees from the South shipped in one and two pound packages. If this is cheaper than solving the wintering question, we would like to see the matter handled by men who know. Bees from the South received at the time of fruit bloom in the North gather honey more rapidly than do those that have wintered here in the North. With cheaper express rates and a lessening of the losses in shipment we may find the wintering question vanishing for there will be none if we quit trying to winter our bees.

Boulder, Colo.

Wintering Bees in California

BY J. E. PLEASANTS.

WHILE there is no wintering problem in California as in colder climates, there is a certain amount of preparation necessary to meet the condition of partial rest, which occurs during the cessation of the honey flow and the rainy season. There is never any time of the year when there is not something in bloom from which bees gather some nectar. This is especially to be noticed in the irrigated valleys and along streams. The eucalyptus, where planted in sufficient numbers, furnishes much nectar, and many species are winter bloomers. Even in the mountains and on arid plains there are several species of "drouth" plants that furnish nectar to some extent in late summer and autumn. This is, however, only relatively speaking. There are not sufficient supplies from such sources to justify any beekeeper in stinting his bees at the last extracting, expecting them to fill up in the fall enough to go through the rainy season safely. Every colony should be left at least 25 pounds of honey, or more.

From Sept. 1 until the middle of January (or Feb. 1, if in the mountains) there is very little for the bees to work on. Rain may be expected any time during this period, though it is unusual to have much before the latter part of November, cool nights, and occasionally high winds.

Bees fly almost any time here when

the sun shines. To prepare bees for the winter season here they should be confined to the brood-chamber or not more than one super left on. That is sometimes best to take care of full combs. Of course, all bees are wintered in the open here. The hives should be carefully examined to see that the covers are all thoroughly water-proof, and a weight should be put



FIG. 9.—PUTTING ON THE OUTSIDE PACKING



FIG. 10—THE HIVE SNUG FOR WINTER

on the cover. The common practice here is to weight them with stones. These are always handy in the mountains, and one finds them used in sizes varying from 5 to 20 pounds in weight. They hold the cover in place and prevent the hive from being blown over if hard winds occur. Sometimes these stones do not appeal to an inspector who has to go through an apiary of several hundred colonies alone, but as he is sure to use them at home there is nothing to be said. Of course during the honey flow, and especially in outapiaries, supers are used up to three, and even four, stories.

In fixing up for winter these surplus combs must be taken care of so they

may be returned to the bees in good condition the next spring. They should be fumigated and stored away in moth-proof quarters, if possible. Where one super is left on the hive, most of the full combs can be taken care of here and used as a surplus for the bees. The hives should be looked through carefully to be sure all have good queens. The hives should be raised from the ground a little on a frame stand a few inches high to keep them from dampness, where cement slabs are not used as foundations for the hive. This, the cement slab, is the very best I have seen, as it is permanent and where extended a few inches in front of the hive obviates the necessity of hoeing away weeds close to the entrance.

As the fall here is the dangerous season for forest fires, an apiary should be well cleaned from grass, and where it is possible a fire-break should be made around it. By Nov. 1 the entrance of the hive should be slightly contracted, and those who use ventilators should close them, or the bees will.

Skunks are a menace to bees here at this season, and outapiaries should not be neglected in allowing them as they will soon weaken a colony. Poison is the best method for getting them, as outapiaries are not visited frequently enough to use traps. A little poison put in an egg slightly open at one end, and set up in some receptacle near the hive, will almost always get the skunks, as they are very fond of eggs.

After an apiary is prepared for winter, the less the bees are disturbed the better. The best way to tell if feeding is necessary is to "heft" the hive, as opening it may cause robbing.

With these few precautions, or rather preparations, our bees winter comfortably here in the apiary and unless the beekeeper has other occupation this is the time for his vacation. Most beekeepers here though, even those who have large apiaries, have some other side line.

Orange, Calif.

Winter Warmth in the Colony

BY DR. K. BRUNNICH.

FOR rational beekeeping, especially for outdoor wintering, it is important to be well informed concerning the economy of warmth in the hive. Everybody knows how much the bees depend upon the outside temperature. Ordinarily they do not fly below 48 to 50 degrees. Still higher temperatures are needed for queens or drones to leave the hive. At about 56 degrees a single bee is soon paralyzed. The brood needs a uniform warmth of 98 degrees; if the temperature sinks under that point, the growing insect may be injured.

An important question is: How does the quiescent bee produce warmth? How does it proceed to keep its temperature higher than that of the surrounding air? I cannot agree with Dr. Phillips' theory that they produce heat by motion, especially of their wings; for two reasons. First, I think it is impossible on account of lack of room. We know that in the coldest weather the bees are crowded together in the narrow lanes of their wax town, many

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of them being motionless in the cells. Under those circumstances, they cannot move their wings, and moreover the oscillations of the wings would produce currents of air unfavorable to the conservation of warmth. Every one who has had occasion to see a colony dead from hunger will agree with me. The bees are packed so closely together that any considerable free motion of the wings is excluded. And a starved colony is indeed a frozen colony. When the bees are unable to produce heat for want of food, the temperature of the cluster sinks and at last the bees are paralyzed and die. Secondly, I believe it impossible for physical reasons, *i. e.*, the bees are unable to furnish mechanical activity sufficient to maintain the caloric equilibrium. A cluster consuming daily, in very cold weather, an ounce of honey, produces about 120 greater calories, which correspond to 360,000 foot-pounds, a mechanical labor which can hardly be produced by a quiescent cluster.

Nevertheless I admit that, in strong chills, the peripheral bees often make movements with their wings to protect themselves from freezing. Further more I admit that a small part of the production of heat is due to mechanical labor through the muscular work of *respiration, circulation and digestion.*

I believe that the greatest part of the production of heat is purely of a chemical nature. It may be as with the bear or marmot, in their winter sleep, who burn their fat probably mainly in the liver and transform it directly into warmth. The liver is the great stove which warms the blood, and by this the whole body. The necessary oxygen is brought by the arteries, the poisonous gas is eliminated by the veins and the fuel is supplied by the *portal vein.* I believe that, in the bees, the tubes of Malpighia correspond to the liver in mammals. They are a bundle of exceedingly rich, fine tubes discharging themselves into the small intestine. The oxygen is furnished by a rich web of *air capillaries*, the fuel—sugar—comes from the blood and the poisonous gases take their way out through the *air capillaries.*

It is a well-known fact that the more the bees consume of their stores the more unfavorable are the circumstances of warmth conservation in the cluster. Besides the material loss, a surplus consumption has other disadvantages; the wear and tear on the bee is greater on account of the augmented labor of digestion. What is worse, the waste of food augments in the large intestine and the danger of dysentery in spring is considerably increased.

Let us now examine how bees proceed to preserve warmth. We know that they cluster together closer as the temperature sinks, in order to diminish to a minimum the surface, which radiates heat according to physical laws. The loss of heat is proportional to the surface and to the difference in temperature between the surface and the surrounding air. Similarly there is in the cluster a constant radiation of warmth from the center to the periphery. For outdoor wintering there are four possibilities:

1. If there is no warm wall around the colony. In this case the cluster

takes the form of a sphere, because this form represents the minimum surface of all solids with the same volume. If the room does not allow the formation of a sphere, the bees cluster in the form of an ellipsoid.

2. If at the top of the combs there is a warm cover, which reduces the loss of heat there is a minimum. In this case the bees form a hemisphere and the free radiating surface is only about 4-5 of case 1. A warm cover, therefore, saves in cold weather about 20 percent of the food.

3. If two colonies are close together, have one common wall and are both covered with a warm cushion (twin-hives). In this case, both colonies behave as if they were a single colony without a separating wall; both form, together, a hemisphere. Therefore, in each colony, there is no loss of warmth against the neighbor, the temperature being the same on both sides. Here each colony forms approximately half of a hemisphere, and the exposed surface of each colony is only about $\frac{1}{2}$ of case 1, or about 5-6 of case 2.

4. If four colonies are close together, have four common walls, and are covered with warm cushions. All the four colonies behave like a single one and form, together, a hemisphere. Here the free surface is about $\frac{1}{4}$ of case 1, $\frac{1}{2}$ of case 2, $\frac{3}{4}$ of case 3 (50 percent, 36 percent, 24 percent). If I understand it correctly this would be the case with the tenement hive.

We thus see that the contraction of the cluster is a means for the regulation of the temperature inside of the colony; the greater the cold the greater being the contraction. Another factor of this regulation is the greater or less production of heat by the bees individually. In view of the wonderful adaptation of the bees to external conditions, we judge their proceedings in the regulation of the inner temperature to be as follows:

When it is very cold, the cluster must produce, in the center, sufficient warmth, that the heat at the periphery may keep the bees from being chilled, *i. e.*, about 57 degrees. Therefore, the colder it is, the higher the warmth of the center must be to make up the greater loss by radiation. This gives a law which appears at first view paradoxical. The colder it is, the higher the temperature is in the center of the cluster. If the temperature of the air is higher than 57 degrees, it is not necessary for the bees to form a compact cluster and each bee produces its proper warmth, for itself, probably some degrees higher than the outside air.

The above explanations agree well with the researches of Phillips. He found 57 degrees Fahr., the critical temperature of the cluster, *i. e.*, that if the outer air begins to fall under this temperature, the bees produce warmth so that the inner temperature rises. Should the bees allow the inner temperature to sink below 57 degrees without taking precautionary measures, they would be chilled and would perish unless the temperature should rise again.

Phillips has already pointed out the injurious effect of inside or outside disturbances (noise, mice annoyances, drafts of air, unsuitable food, etc.), thus producing an unnecessary rising of the

temperature at the center, with all its bad consequences.

The circumstances are different when the colony begins to breed. In this case, the central temperature is higher than necessary, *i. e.*, it is under all circumstances about 98 degrees. The surplus warmth causes a loosening of the cluster, which is favorable to the free circulation of the breeding bees as nurses, fetching pollen and honey. It is then most important to keep up the warmth by cushions or otherwise.

Zug, Switzerland.

Queen-and-Drone Traps

BY F. GREINER.

SOME years ago it occurred to me that I might more successfully handle my bees in the outyards if I could in some way hinder the queens from leaving the hives. I therefore went to work and got out enough material for a large number of queen-and-drone traps, intending to make them up for use that season. However, I made up only a very few, and after observing how much the bees were hindered by them, particularly in entering the hive, how many pollen pellets were dislodged from their pollen baskets, the manner in which the drones behaved attempting to gain the outside, etc., I concluded that I would lose more by using the traps than I could possibly gain. I admit I did not test it out. I simply did not have the courage to torture my bees with such a nuisance and I dropped the matter.

When our colonies are most populous, when most honey producers give the largest entrance, even placing blocks under all four corners of the hives, in order to make it as comfortable for the inmates as possible, if we are to shut down to a small entrance full of obstructions, thus aggravating the already dangerous conditions, what result can be expected? Everything crowding to the only exit, multitudes of drones trying to force their blocky bodies through the narrow perforations, thereby hindering the workers! The drones are slow in finding their way through the little cones up into the trap and collect in great numbers. The noise they make is trying on the nerves of the apiarist.

I think we should have laws on our statutes to prevent such torture of these little insects. I have not found much use for drone-traps so far.

The clipping of the queens is only a safeguard, at best, in case we make a miss in our management. When every queen is clipped the chances that a possible mass of 25 pounds of bees may go to the woods are small. The larger the number of bees kept in a place the more necessary it is to have all queens clipped. In a large yard several swarms may issue at the same time, and if one queen is with them, they are sure to go somewhere before the apiarist is likely to give them attention. To his sorrow he will discover that the supers on a number of colonies are empty of bees. He may then wonder why. Queens not all clipped.

Naples, N. Y.

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THE EDITOR'S VIEWPOINT

Instructions to Beekeepers

The Agricultural Extension service of the University of Minnesota is publishing a monthly letter of advice to the beekeepers of the State, under the management of Prof. Francis Jager. It is a good thing. Other States would do well to follow this method.

Fertilization of Queens

H. Mulot, having in the course of years had more than a thousand opportunities for observation as to the fertilization of young queens, reports some of his findings in *Leipziger Bienen-Zeitung*, page 115.

He says that fertilization usually occurs between 12:00 m. and 5:00 p.m., with still weather and a temperature of at least 65 degrees Fahr., mostly between 1:00 and 3:00 o'clock p.m., and quite rarely before 12:00 or after 5:00 p.m., or at a lower temperature than 65 degrees. If the weather is favorable, most queens are fertilized at the age of 6 or 7 days.

"Several years ago," he writes, "virgins emerged from their cells on the same day in about 20 of my colonies and nuclei. To determine at what age they were fecundated I examined each day after 5:00 o'clock p.m., to see whether fertilization had taken place, as every experienced beekeeper knows the signs of fertilization are easily seen; besides one may know from the beginning of egg laying, which usually occurs 42 to 48 hours after fertilization. One queen mated at 4 days of age; 3 at 5 days; 8 at 6 days; 6 at 7 days; and the remaining two at a later age; the weather during this time having been favorable throughout."

It may be recalled that Henry Alley said no virgin ever mated under 5 days of age, which very nearly agrees with the foregoing.

It would appear from Mulot's figures

that a queen should generally be laying when 8 or 9 days old. At first, however, eggs are so few as not to be easily found, so in ordinary cases it is as well not to make an examination until the queen is 12 days old or older. It must be remembered, however, that the weather is not always favorable, so there may be delay.

Sectional Hives

The question of sectional hives having been raised lately, we have secured for the *Bee Journal* a very interesting thesis covering the entire subject by an enthusiastic Canadian student, Mr. W. F. Geddes. This thesis was approved by the able Canadian professor, Morley Pettit, of Guelph, Ont.

Heading Off Swarming

A Pennsylvania correspondent asks my comment on J. P. Blunk's way of heading off swarming, as given in *Gleanings* for July 15, page 610, which is as follows:

"Prepare a hive with an empty comb to catch the pollen, a comb of suitable brood from which queens can be reared, and fill up the rest of the space with dummies. Put this hive on the stand of any strong colony that is preparing to swarm, with a couple of supers on top. Put on a good wire escape-board, and on top of all set the strong colony without its bottom-board. The flying force will all go downstairs in 24 hours, and so few bees will be left in the original hive that they will tear down all queen-cells, which might be on the combs; the queen, of course, being left in the old brood-chamber on top.

"The queen will keep right on with her laying. In 14 days take the old hive off, remove the queen, or leave her, as desired. Put one of the queen-cells built in the lower story in the old hive and set it on a new stand, contract the entrance and remove all cells except one from the new colony. Supply frames of foundation, put on more supers, and the job is done.

"If no increase is desired put the combs in the prepared hive below back in the old brood-nest, after removing the queen from the latter. This will not take long, as the bees are scarce, as above mentioned. It is necessary to remove all queen-cells but one on the frame of brood in question."

I am not certain whether I fully understand the whole proceeding, but on the face of it it looks as though the old brood-nest with the queen is left for 14 days in the story on top, with nothing coming into it, with a ticket-of-leave for any bee that might want to go below, and never a bee returning, and with such a dearth of two weeks duration one would hardly expect the brood-nest to be in the most flourishing condition. But Mr. Blunk is a beekeeper of experience, and no doubt makes it work all right. Possibly he makes an opening from without to this story above, through which the younger bees establish an entrance.

My correspondent says: "Bees might, with the arrangement directed, not go through the escape in 24 hours; I have just now three cases in which I had three comb-supers on that many colonies, and in 24 hours the bees did not get out, while they did wherever there were but two or one super." Well, if they were very much longer than 24 hours, it wouldn't matter, the important thing is that nothing would be going in, and that would discourage the bees so as to insure the destruction of all queen-cells. But it must be noted that the two cases are very different. When we put an escape under surplus honey, we want *all* the bees to get out, and the sooner the better. In the case in hand we do not want all the bees to get out; it would be a disaster if they should, and Mr. Blunk expressly says that the flying force will go downstairs in 24 hours, leaving the younger bees to do duty as nurses.

C. C. M.

United Effort

The following item appeared in a recent issue of the *Breeders' Gazette*:

NATIONAL ADVERTISING OF DAIRY PRODUCTS

A fund of \$50,000 has been subscribed by men prominent in the dairy industry for the preliminary work of the big national advertising campaign to increase the production and consumption of milk, butter, buttermilk, cheese and ice cream. Advertisements are in preparation and will shortly appear in weeklies and monthlies of national circulation and in leading dailies.

It is proposed to raise a total fund of at least \$750,000 to cover a complete campaign of three years and to expend in advertising, general publicity and organization work approximately \$20,000 a month for 36 months.

There has been no more remarkable

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development than is shown by the dairy industry in this country during the past 25 years. While honey has shown a tendency to lower prices, butter has steadily increased in production and at the same time the price now averages at least twice and probably three times what it did once. If honey production is to become a leading industry the beekeepers must learn from their prosperous neighbors. From the above it will be seen that a fund of \$50,000 was readily subscribed to begin a campaign of advertising which has for its object not only increased consumption but also increased production of dairy products. With a fund of three quarters of a million dollars they will do wonders in a 3-years' campaign.

A few years ago there was an element among the dairymen loud in its cries that butter and cheese would shortly be produced at a loss because of over-production. Now the leaders are proposing to advertise the increase production along with consumption. They know full well that if production does not keep pace with the increased demand substitutes will take the place of their products, as has been the case with us when corn syrups have to a large extent replaced honey on the table of the American family and lowered the price of honey instead of raising it.

The Oldest of the Bee Journals

A very pretty little magazine entitled "Little Lands in America," in its July number, gives a quotation taken from *Gleanings in Bee Culture*, which it mentions as "the oldest of the bee journals." We do not wish in any way to disparage our courteous and well-managed contemporary *Gleanings*. But this qualification does not belong to it. The oldest of the bee journals now in existence is *L'Apiculteur*, of Paris, which was established in 1856. The next oldest, and the oldest in the English language, is the *American Bee Journal*, which was established in 1861, in Philadelphia, Pa. *Gleanings* and the *British Bee Journal* were established simultaneously in 1873.

Prepare Now for Winter

To the smaller and inexperienced beekeeper it may seem premature to open the discussion of wintering in this number of the *American Bee Journal* which reaches our readers on the first of September.

And yet it is even now late enough to make the most thorough preparations if we would have our colonies come through the winter in good

shape, so as to avoid large winter losses, spring dwindling, and so as to have all colonies in the best possible condition for the harvest next year.

There are four major factors in the preparation of colonies for winter which make for this desired end. They are:

1. Plenty of good stores.
2. A strong cluster of young bees.
3. A good queen.
4. Protection.

It is absolutely imperative that all colonies be supplied with abundance of good stores so that they will not want at any time during the winter. This is especially true of the North, localities where it is harmful to disturb the cluster on account of the cold. It is equally advisable in the warmer climates, although not so imperative, since feeding could be done during winter if necessary.

The beginner will ask how much honey is required. It is advisable to have at least 30 pounds to the hive, the quantity varying some with localities and duration of lack of honey flow.

Such stores should be good stores. This is also more imperative in the North where the bees are often months without a flight. Here, care should be taken to avoid honeydew, sour honey, fruit juices, and other honeys which have a deleterious effect on the bees. Aster honey has been reported from time to time as belonging to this class, though in some localities it seems as good as any other honey.

A strong cluster of young bees. The emphasis should be placed on *young*. Too many beekeepers think their colonies in excellent condition because at the close of the summer flow they are strong in bees. The fact is that most of these bees have done their share of the work and are old. The result is a dwindling in the numbers of the colonies early in the winter, causing either total loss of the colony during the winter or serious spring dwindling. In the absence of breeding in the early fall, owing to a dearth of nectar or some other cause, it is very often advisable to stimulate such breeding by fall feeding.

Only too often the lack of fall breeding is caused by a failing queen, especially after such a honey flow as the central West has had the past summer. Queens become worn out with excessive laying and should be replaced. Very often the bees replace the queen themselves by superseding, but the instances of failure of the bees to do this are not rare, and it behooves the beekeeper to make sure that his colonies

go into winter with young vigorous queens. This is not only desirous on account of fall breeding, but also that the colonies may come out in spring with a good prolific queen rather than be queenless or have a drone laying or failing queen.

Protection varies with locality. In some parts of the country the only protection needed is a good tight hive as a protection against robbers and against the rain.

In other localities cellar wintering is practiced, and conditions of moisture, ventilation and temperature have to be watched carefully.

In a large proportion of localities outdoor protection is afforded. When such is given the beekeeper should make sure of a good tight hive, a sheltered location if possible, abundance of good packing, and proper ventilation. Several methods of outdoor packing are practiced, some of which are given in this number.

Summer Course in Ontario

The first summer course in beekeeping was held at the Ontario Agricultural College, June 12 to 16. There were about 20 in attendance, which was a good number considering the busy season and the fact that backward weather had put all farmers behind with their work.

The speakers included Mr. Frank C. Pellett, State Apiarist of Iowa, Mr. F. W. L. Sladen, of the Central Experimental Farm, Ottawa, Mr. James Armstrong, Vice-President of the Ontario Beekeepers' Association, Morley Pettit, Provincial Apiarist, and Geo. F. Kingsmill, assistant to the Provincial Apiarist.

The work was concluded to supplement the winter course applying in the apiary the things learned in the classroom. Members of the class were expected to supply themselves with veils and smokers and were given apiary practice.

Crop Conditions

Latest crop reports indicate a good flow of clover honey throughout the central and eastern States. Colorado conditions are probably below normal, while parts of Idaho, New Mexico, and Arizona indicate about half a crop. California will probably yield 60 percent of a normal crop with Texas conditions about normal.

So far the honey markets have been low, owing to the large amount of clover offered. Conditions should improve, however, and prices should rule about as strong as last year unless present reports are erroneous.

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No. 4.—A Trip Through Texas

BY THE EDITOR.

WE now had to leave our headquarters at San Antonio and did so with regret, for the beautiful city, with its warm, dry breezes, its semi-tropical vegetation, its winding little river, its Spanish-American architecture, its far-famed Alamo, rendered venerable by the tragic death of its garrison of 150 Americans in 1836, its numerous but peaceable, bronzed, semi-Mexican population, made a very pleasant impression upon us.

Among the beekeepers whom we met at San Antonio, during our stay, in addition to those already mentioned, were Messrs. H. Grossenbacher and Emil Ripps. The former is county inspector of Bexar county, and from him I received the first intimation of the value of this county in honey production. Mr. Grossenbacher asserts that there are some 700 beekeepers in the county.

According to the statistics of the Texas Experimental Agricultural Station, there are in Texas about 16 colonies in movable-frame hives to one in box-hive. But in Bexar county the proportion is 92 to 1.

Mr. Ripps is the apiarist whose hospitable wife offered to the National Association, at its San Antonio meeting of 1906, an immense bouquet from her flower garden, although the date was Nov. 15, and northern flower gardens were bare. This bouquet was presented to Dr. Bohrer, the oldest member in attendance. The Ripps are still at San Antonio, and still hospitable.

Our next stopping place was New Braunfels, for a call on our friend Louis Scholl, well-known to the readers of the Bee Journal, by his articles on "Southern Beedom," beginning over ten years ago. He was secretary of the Texas State Association when the National met at San Antonio, a position which he held for a number of years.

We had again to thank Mr. and Mrs. LeStourgeon for the trip to the Scholl home, in their automobile. It had all been arranged beforehand and the



GROUP OF FIVE HIVES ARRANGED AFTER SCHOLL'S METHOD



LOUIS H. SCHOLL

Scholls were expecting us. These young people had just been married, in 1906, when I met them first, and they look as young as they did then, though they now have a daughter 6 years old.

Louis Scholl has as fine a collection of specimens of honey-plants as I have

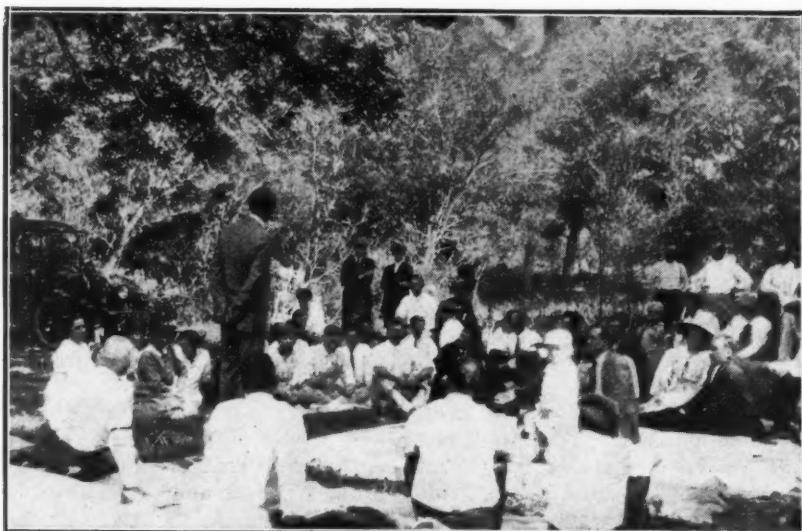
ever seen. A herbarium is difficult to preserve in good shape. We know this by experience, for we secured the Newman collection from Mr. Your some years ago, and we would be ashamed to exhibit it today. The Texas honey flora is so extensive that a collection of most of its specimens is interesting and instructive.

Scholl has at present between 1000 and 1200 colonies of bees. He has had a greater number of apiaries, but lost seven of them in the flood of the Brazos Valley in 1913. All his colonies are in shallow stories, the brood-chamber being of exactly the same size as the supers. Two or more stories are used for breeding and as many more as necessary for surplus. The crop is mainly *bulk comb-honey*; as a rule only enough extracted honey being secured to fill the spaces between the joints of the combs when they are cut and fitted into the receptacles. This custom seems to be uniform all through southern Texas. Scholl's method of beekeeping is very simple, since all the stories are alike. He claims better results than with full-sized brood-chambers.

The distance bees usually travel for honey is estimated by him at less than 1½ miles, and with apiaries two miles apart he often notices a great difference in the yield, both as to quantity and quality, indicating that the bees do not work on the same pasture.

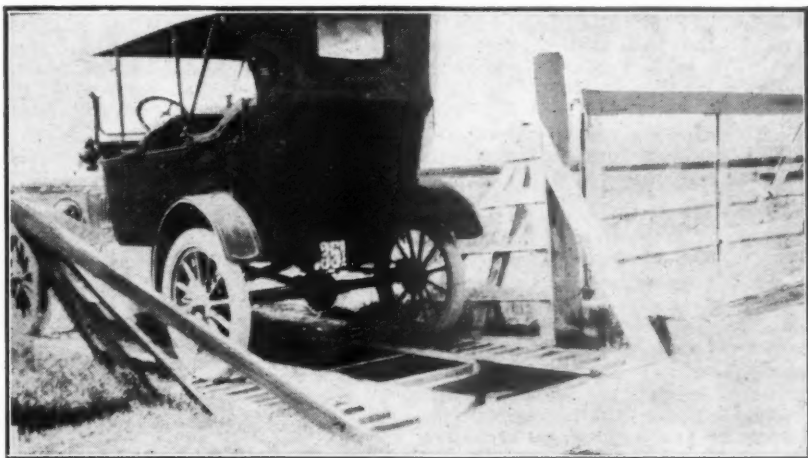
He has a few rare bee-books, two of which I had never seen, though I knew of them: "The True Amazons or the Monarchy of Bees," by Joseph Warder, London, 1726, and a translation of Huber's work of 1841.

We visited with Mr. Scholl an apiary which depends solely upon cotton blossoms for its crop, being too far from the chaparral for other grades. The hives are arranged "Scholl fashion" in groups of five, so the workers and queens are less likely to make mistakes and enter the wrong hive. I believe our friend is correct in saying that long, uniform rows of hives, that are exactly alike, have a tendency to weaken the weak colonies and strengthen the strong ones, as the young bee, at its first flights, is apt to hesitate as to the exact location of its hive, in a long row, and the hum of a strong colony attracts it. This is good reasoning. The worst losses are those of young queens returning from their wedding flight. The colony is at that time usually without young brood from which to rear another, if the queen is lost. So it is doomed unless the loss



LOUIS H. SCHOLL ADDRESSING BEXAR COUNTY FIELD MEET

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AUTOMOBILE CROSSING ON TEXAS GROUNDS TO SAVE GATE OPENING

is promptly discovered.

The afternoon was spent at the public park of New Braunfels, whence their river flows. Here, as in San Antonio, a very beautiful stream comes out of the hillside, boiling up from the ground and supplying several hundred cubic feet per second, of the clearest water that may be seen anywhere. It forms a small lake and a river. It is fine. We were told that New Braunfels was an early settlement, and that the scouts sent by the immigrants selected this location because of these beautiful and immense springs. A fine city has resulted.

That evening we bade good bye to our hosts and to the LeStourgeons, whose kindness it will be difficult for us to repay. The next morning saw us on the train for College Station.

Along the railroad line planters' homes, surrounded with groves and built in colonial style, in level plains, indicate cotton plantations. The little cabins, for negro or Mexican field hands, are strung in endless rows along a private byway. The absence of out-buildings for chickens or pigs, around these cabins is striking. Is the planter to blame or are the tenants too shiftless to keep poultry? No wonder there should be a tendency to "provide" by visiting at night the coops of more thrifty neighbors. That is the explanation of the proverbial love of the southern negro for chicken. It appears to be a rarity.

We expected to find something of a town at College Station. But the city, Bryan, is about four miles away. The college is on a gentle sloping hill. Professor Paddock was at the station and informed us that we were to be the guests of the institution, an unexpected honor. An hotel is the usual stopping place of visitors at colleges.

The Agricultural and Mechanical College is not a co-educational institution. It is only for young men and the cadets have military drills during every year of their stay. This 4-year drill ought to come in every United States College. It would help make every man a soldier, in case of need, as in Switzerland, a small country with democratic institutions which is now setting an example to the entire world.

The college boards its students and everything is done with military pre-



F. B. PADDOCK, OF TEXAS

cision, the morning call and the meals being announced with the bugle.

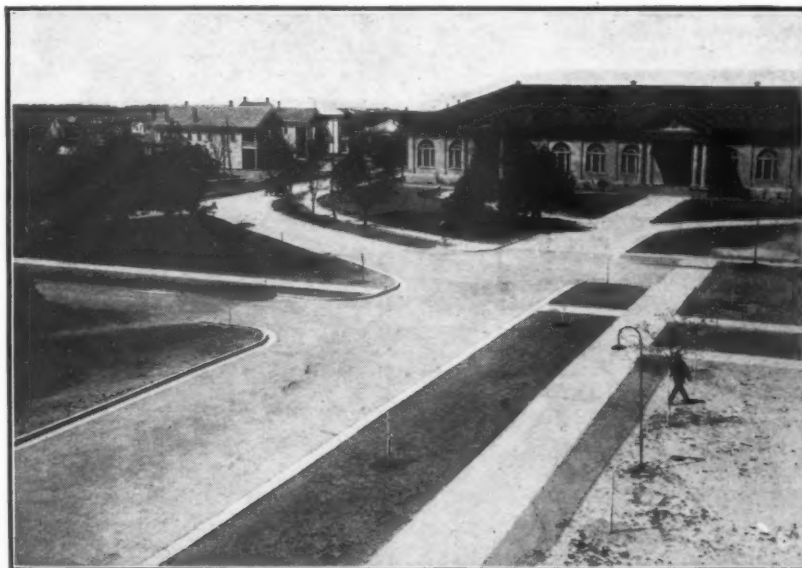
One of the views given here shows one of the main academic buildings in front of which is assembled the cadet corps. There are three battalions composed of four companies each. This formation is made for all meals and all military maneuvers. The little building shown to the right of the Academic Building is Pfeuffer Hall, one of the dormitories. The part of the building shown on the extreme right of the picture is the Civil Engineering Building, in which is housed the departments of Civil Engineering, Irrigation Engineering, Railway and Highway Engineering and Physics.

The other view shows a portion of the new mess hall, and to the left is shown the Shirley Hotel and the Shirley Annex. In these two buildings a great many of the officers of the college live and board.

It would be out of the limits of my subject to discuss or describe the main agricultural studies of the college. In beekeeping I found very accurate methods and a wonderful system. As I have said before, apiary inspection is in the hands of the entomologist; but it is with the help of county inspectors whose names are suggested to him by the local associations of beekeepers. This is an incentive to organization. The entomologist's principal duty is to tabulate the reports and to direct the work.

The investigations and statistics begun by the previous entomologist, Mr. Wilmon Newell, well-known to our readers, are ably continued by the present incumbent, Prof. Paddock. Blanks to be filled are sent to the inspectors and to beekeepers generally. Among the questions asked is whether beekeeping is preferable as a side-line or as a profession. In most States the answers would almost invariably favor it as a side-line. But in Texas, Bulletin No. 58 shows 705 beekeepers favoring beekeeping as a profession, a remarkable large number, perhaps not to be equaled in any other State.

The replies as to the production of



APPROACH TO THE MESS HALL AT THE TEXAS A. AND M. COLLEGE.

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honey are also noteworthy. Out of a total production reported of 2,400,000 pounds, in round figures, 1,510,000 was bulk comb honey, 823,000 extracted honey, and less than 76,000 pounds section honey, indicating the enormous proportion of bulk comb honey produced.

The college has at present no apiary on the grounds. This is a deficiency that ought to be supplied, in order to give the students of apiculture ample opportunities to study and experiment. Apiculture in Texas is too important not to give it all the attention possible. Many spots of that immense State have no resources as valuable as honey production. The honey of these districts is of good quality and sells readily. They are just beginning to find out the possibilities of the industry. They have a capable, young and energetic entomologist at the head of this department and will doubtless give him good backing. The time has come for full recognition of beekeeping even in States of lesser production.

There is no winter problem in Texas; the worst features being spring dwindling of colonies and foulbrood. The former may be warded off by attention and the supplying of artificial pollen when there is a dearth of flowers. The latter has spent its force and the system of inspection employed will sooner or later put it under full control, when sufficiently sustained by legislation. In the olden days such scourges were like prairie fires and died only for want of fuel, after having swept the land. Nowadays they are stopped by man's ingenuity and persistence.

The acting professor of entomology is S. W. Bilsing, and Mr. B. Youngblood is director of the experiment station. We were taken over the Agricultural grounds in his automobile, and I noticed the peculiar auto passages by the side of the farm gates. They are built like the cattle guards of railroad crossings. This does away with the necessity of opening gates, except when horses are used. It saves time.

I said we were the guests of the college. Before leaving, I must acknowledge the courtesies and kindness of Mr. Sbis, supervisor of the subsistence department, and of his kind wife, who looked after our welfare. Mr. Sbis, a foreigner by birth, has occupied his present position for 38 years out of the 39 of the college's existence. His motto is "economy." He does not believe in the too common habit of wastefulness, but knows how to provide abundance through judicious saving. A visit through his department which ended our stay showed us that the "high cost of living" is easily lessened by good management. The total cost of board and rooms is less than \$180 per year for each student.

After 18 days in the Lone Star State we returned home March 23, to find ice still ruling a good part of Illinois.

A Letter from Hawaii

BY W. L. PORTER.

BEE CULTURE in Hawaii interests me because this tropical country is quite different from our North Temperate Zone. Since the beginning of the European war, nearly all the

honey produced here has been shipped to the States and sold at very low prices. The readers of the American Bee Journal may be interested in learning more about it.

We have a daughter who has been living in Honolulu for some time. Wife and I came to visit her last winter. We left our home in Caldwell, Idaho, on Nov. 4, and spent some time at the San Francisco Fair. We sailed for Hawaii on Nov. 9, making the trip in six days. The sea was quite rough when we left the harbor, but Mrs. Porter and I seemed to be good sailors, and the passage was a great pleasure.

It is difficult to express the beauty of scene and climate of these islands, where there is but little change of temperature the year around, no excessive heat, with the thermometer rarely below 60 degrees.

Through the kindness of Mr. Westgate, superintendent of the Experiment Station, I was handed the reports concerning beekeeping in the islands. There are about 20,000 colonies, and the output of honey is around 1000 tons, or an average of 100 pounds per colony. But it is a very low grade of honey. A portion of it is honeydew gathered from the sugar cane, mixed more or less with nectar from the flowers. The only good table honey is from localities where the algarroba tree is abundant and no sugar cane is produced. This tree is somewhat shaped like our honey locust. But the pods are more like bean pods. It was introduced from Australia in 1838 by a Catholic priest, and the original tree is still standing on the corner of the Mission grounds. It is now the principal forest timber of the islands, for it grows rapidly. It blooms twice a year, in May, and again in the fall. The pods contain a sweet gummy substance. They are picked by the natives and the Japs, and sold for about \$8 per ton to make algarroba meal, which is used as feed for all kinds of stock. Its honey is white, like alfalfa honey and of mild flavor. When it is free from mixture

with honeydew it makes good table honey.

Most of the other honey-producing plants bloom in the spring, but there are flowers in greater or less number the year around.

The honeydew is an aphid production similar to that of the United States.

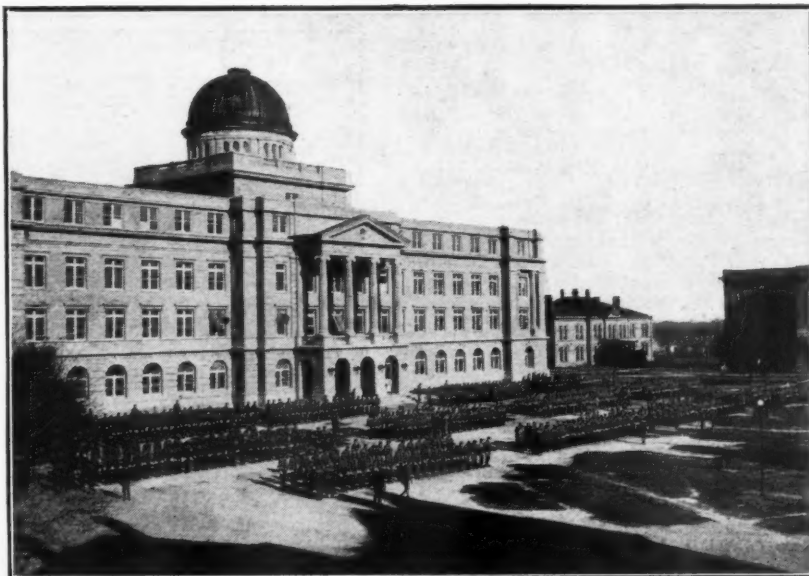
They have no wintering problem here and it looks like a bee-paradise, but when we come to look into the situation very few people will be tempted to make the change. The greatest drawback is the exceedingly low quality of the honey and the poor price it brings. Mr. Longley, superintendent of the Island Marketing Association, informed me that he had on his hands a quantity of that honey which he is willing to sell at 1½ cents per pound, and algarroba honey at 2½ cents. They used to ship most of it to Germany, where it was used for baking. They then realized about 4 cents per pound.

The freight to Seattle or San Francisco is \$400 per ton, so that this honey on our coast is worth about \$29 per ton. If it were not of such poor quality, we would face a hard proposition to compete against it.

Mr. E. C. Smith superintendent of the Garden Island Bee Co., is one of the best posted beekeepers on the island. I went to visit him, but he had just sailed for Australia, so I could not meet him. Miss Brown, his wife's sister, had the business in charge. She kindly entertained us and showed us things of interest. She has charge of the queen-rearing for 3000 colonies. After a thorough inspection of the colonies is made, the most of the work is performed by Japanese.

Since the honey market is so low, they aim to produce a large amount of beeswax. Mr. Smith is conducting experiments in this matter, to convert honey into wax by feeding it back. The experiments have not been carried far enough to obtain anything definite on this interesting subject.

In extracting the honey, they aim to get as much wax as possible. They



CADETS IN REVIEW AT THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

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use 10-frame hives, but only 8 frames in the supers. They use foundation starters, and when the combs are filled the honey is extracted and the wax rendered. Then new starters are put in. By this method a great amount of wax is produced and of the very finest quality. It also avoids the danger of wax-moths who are very numerous and very destructive.

It is my aim to get fully acquainted with the value of this cheap honeydew for feeding bees. I expect to ship a ton of it to my locality in Idaho for an experiment in feeding, and will be glad to report upon it in the American Bee Journal, as it might prove of value for that purpose to the beekeepers of the sweet clover and alfalfa districts. They could thus save their better grades for sale.

There may be beekeepers in the United States who are looking for better locations and thinking of coming here. In my opinion it is not the place to locate. The best spots are in the hands of four large companies and belong to men who live in the city. The small beekeeper who would live near his bees would have only natives and Japs as neighbors and society. There are no bee diseases here, but the moth, as I said before, is very bad. The climate is pleasant, but the warm air and dampness cause one to perspire so freely that those unaccustomed to it cannot stand hard labor. Very few of the whites here do any manual labor. But it is a beautiful place for a vacation. Honolulu, Hawaii.

[[Mr. Porter, whose portrait was given in our June number, page 189, 1915, is one of our old experienced beekeepers. His interesting letter confirms some of the things mentioned by Dr. Phillips, in 1909, in Bulletin No. 75 Part 5, on "Hawaiian Beekeeping." Dr. Phillips already mentioned the desirability of increasing the production of beeswax instead of honey. This branch of the industry does not seem to have made much if any progress in the seven years that have elapsed. An apiarist of South America at one time claimed to produce beeswax on a large scale

from low priced honey. Hawaii would certainly be the proper country to do this if the thing is feasible. It is quite probable that the Hawaiians have as good method as may be devised. Even if beeswax costs the bees 10 pounds of honey for each pound produced, there would be a fortune in a practical method of wax production that would not weaken the colony.

We will be glad to hear further from friend Porter.—EDITOR.]

Habits and Life Functions of Bees

BY J. E. HAND.

IN solving problems involving the activities of bees, it is important to have an experimental knowledge of bee nature and a correct interpretation of the laws that govern their acts, lest we draw wrong conclusions concerning their activities. As well try to define the motion of planets in the heavenly constellations with a telescope, without experimental knowledge of astronomy, as to presume to draw right conclusions from observations with glass hives, without the ability to distinguish between abnormal and normal activities of bees. An interesting feature of the domestic economy of the hive is that many important problems are solved by bees incidentally and insensibly through the performance of the ordinary functions of life.

For example, nectar is digested to make honey, and incidentally and insensibly wax is secreted by the internal organs. Likewise, honey is consumed to sustain life, and incidentally and insensibly larval food is secreted by involuntary action, and heat is generated, presumably by the process of metabolism and the oxidation of food consumed and transmitted to the cluster. It is, therefore apparent that every bee that consumes food and inhales oxygen is a unit of incessant involuntary heat generation, not excepting queens and drones.

Likewise supersedure cells are built

because of temporary exhaustion of queen fertility, and incidentally swarms are precipitated by the presence of capped queen-cells. I believe that swarming is a momentary impulse developed and quickened by the antagonism of a vigorous queen towards a capped queen-cell, aided and abetted by the innate habit or impulse of bees to seek a new home when domestic discord demands it. Again, bees form a compact cluster for mutual warmth and comfort, and incidentally heat is conserved and regulated by external meteorological fluctuations operating through the expansion and contraction of said cluster. For example, cold weather contracts the cluster, conserving the heat, and causing a rising temperature within said cluster, and *vice versa*. Even a slight contraction will immediately be followed by a corresponding rise of temperature, and *vice versa*. It, therefore, follows that expansion and contraction of the cluster is the sum and substance of heat generation and regulation so far as relates to the activity of bees. While I believe these deductions are reasonably correct, mortal is not immune from error, therefore, I have great respect for any whose opinions may differ from mine. Birmingham, Ohio.

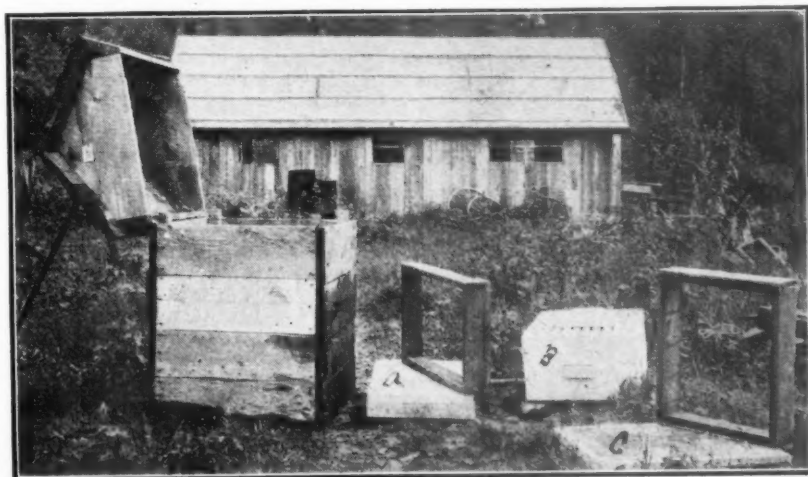
[The term "digested" applied to nectar which is transformed into honey is not accepted by all. There is an undoubted chemical change in nectar, between its secretion in the blossoms and its deposition in the cells and this change is wrought in the honey-sac. But it is not a true "digestion."—ED.]

Packing a Small Apiary

BY JOHN A. STEVENS.

ATACHED is a photograph of a part of my apiary and also a photograph of the winter case which I have used for the past four years. As my winter losses are so small I shall continue to use the same method. The cases are 24x28 inches, inside measurement, 30 inches high. Roof hung on hinges so as to turn back out of the way when packing or other manipulations. A shows a bottom-board on its edge or side. The tray is 24 inches long over all. It should have been turned the other way so as to show the 4-inch cap that goes across the front end on top of the tray. This leaves 20 inches to set the hive on, and it butts up against the cap, which makes 5 inches (when the hive is placed in case) for the bees to travel. The trays are about 3 inches deep, which leaves a space between the bottom-board and the lower part of the hive for dead bees to drop, and as the entrance in the tray is at the top, there is no danger of the entrance filling up with ice or dead bees.

B shows the hive with an inverted butter chip placed on top of the brood-frames, which I claim permits the bees to pass up over the top of brood frames when they have consumed all the honey above the cluster and pass over where there are more stores, instead of bumping their heads up against the cover



PACKING CASE READY FOR INSERTION OF A COLONY OF BEES

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and starving to death. I place a cloth over the butter chip and entire top of frames, then an empty super which I fill with planer shavings, then another cloth, and finish with the cover on top of it. Then I have a 4-inch space all around (ends and sides), which I pack also with planer shavings 10 or 12 inches thick on top of cover. The roofs of the cases are covered with tar felt. I have two long cases in which I place eight colonies in one and nine in the other, but I use the trays the same as in single cases.

You will notice the entrance in the tray corresponds with the entrance in the case. I keep the bees in the cases until all danger of cold nights and killing winds are past.

The second photograph shows the hive, tray and super in position as it appears when inside the case. My losses last winter were a little greater than any winter before, but it was on account of a lot of unsealed aster honey which I am sorting out this fall.

Photograph No. 2 shows myself and good wife, who is a great assistance to me in the apiary. My bees have averaged me 73 pounds to the colony. We have had so much rain that they had too much time to loaf. While I am a would-be beekeeper, I am proud to realize that I am slowly improving, thanks to the American Bee Journal and other good bee-literature which I obtain.

Mio, Mich.

Why Honey Producers Should Organize?

BY R. C. GANO.

A NUMBER of doubts have been expressed and objections voiced regarding the plan for a national organization of honey producers, discussed in the March issue of American Bee Journal, under the title, "A National Publicity Campaign for Honey." One of the most valid was that while the annual production of honey is probably in excess of the annual production of oranges and lemons, most of the honey producers carry honey as an unimportant side line, probably less than 200 producers depend solely upon honey

for their livelihood. It was argued that while citrus growers have their primary interest in their orchards and can thus afford to take the trouble of cooperating, only a few honey producers consider this part of their production important enough to take unusual pains with the marketing.

This situation certainly complicates the problem, which was complicated enough before this point was brought up. With other objections that have been raised it makes the fact apparent that national publicity for honey, joined in by the entire industry, while it would undoubtedly be a good thing, is so far ahead that it becomes necessary to urge the preliminary steps towards it on their own merit. A great many producers will feel this way: "Oh, what you say may be true, and we would like bigger demand and higher prices; but it's too long a haul. There is too big a preliminary investment of time and trouble." The only answer to that is to show that the preliminary steps would pay, themselves, even before the bigger ideas were achieved.

The first step towards national organization of honey producers should be local organization. The producer can't be blamed for refusing to organize locally if it is going to cost him money

in the first few years until a national organization is formed; especially when he realizes things may go wrong and a national organization may never be formed. But suppose it can be shown that local organization would pay of itself, and be a good investment of time and trouble, even if no bigger organization were ever attempted. Then he might well consider taking part in a local organization plan.

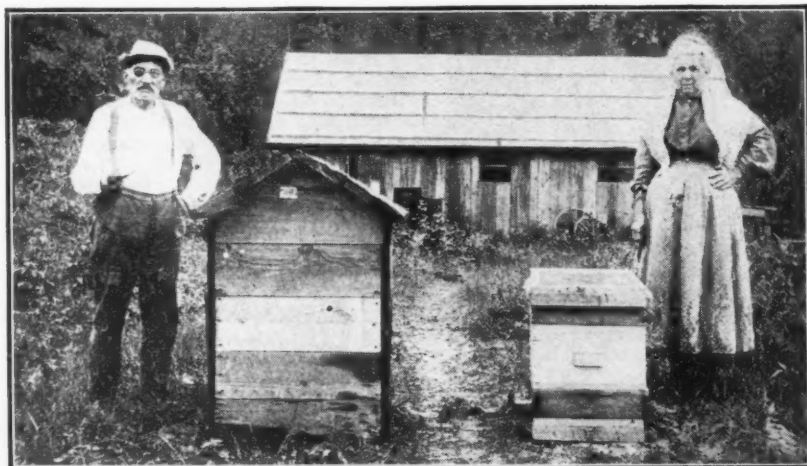
What are the benefits of a purely local organization? Do they pay by themselves, in any agricultural industry? Would they pay in the honey industry?

In an endeavor to answer this question at least in part, a query was sent to a district exchange within the California Fruit Growers' Exchange, and here is the reply: "Organizations for the purpose of marketing would be ineffectual and useless, we maintain, operating as independent local associations. All they could accomplish would be possible uniformity of the product through pooling interests, establishment of a regular brand, and reduction of handling costs by cooperating in the preparation of the product for market."

This statement, on analysis, is not so unfavorable to local associations as it



APIARY OF JOHN A. STEVENS AT MIO, MICH.



A PACKED AND AN UNPACKED COLONY IN THE APIARY OF J. A. STEVENS

may sound. The writer, in saying "for the purpose of marketing" evidently means "for the purpose of controlling or influencing market prices;" because he goes on to show that in other ways local associations are not ineffectual and useless. What are the things that he says local associations can accomplish?

1. Uniformity of the product.
2. Establishment of a regular brand.
3. Reduction of handling costs in preparation of product for market.

From the standpoint of the California Citrus Exchange it is entirely proper to regard a local as by itself ineffectual and useless. One of the citrus locals would certainly appear so if it seceded from the Exchange. Yet it is well to remember that the locals out in the citrus territory are the very heart and sinew of the larger organizations.

BENEFITS FROM LOCAL ASSOCIATIONS.

When every citrus grower was for

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himself, the growers in a given community were competitors. A buyer would come into contract for fruit and the growers would bid against each other, cutting each others' prices. The lowest bidders got the orders and more or less set the market price—away down below where it should have been. This same thing happens in every market where the producers are unorganized, though it may not be obvious on the surface. Maybe it was more obvious to the citrus growers than to most farmers, because they saw way back in 1893, how foolish it was for them not to combine against the buyers.

It is perfectly true that local associations of honey producers would not be very powerful in the markets. Still they would eliminate neighborhood competition. If the buyer wouldn't meet the fair price agreed on he would at least have to travel to the next community. And there, if another association was met with, he might still be unable to buy. Local associations would help a little in the crusade for fair prices. District or State association would help more, as has been proved in Colorado.

SAVING IN PACKING.—Before the citrus locals were formed the buyers bought the fruit on the tree, as a rule, and did the packing themselves, charging the growers so much per box for this service. They usually charged 60 to 70 cents a box for oranges, and \$1.00 a box for lemons. The local association built a packing house and the growers began doing their own packing cooperatively. Supplies were bought on a fairly large scale, paper, shook, nails, etc. Savings were made at once, though the present cost is probably lower than a local alone could have ever carried it. The present cost is about 33 cents a box for oranges and 60 cents for lemons. Supplies are now furnished by the Exchange's own supply company which secures greater economies than wholesale buying by the locals could accomplish.

SAVING IN PICKING.—The picking of citrus fruits is a science. If the fruit is handled carelessly it is pretty apt to decay in transit, being sensitive. Even careful picking by any but experts causes some decay.

The growers formerly picked their own fruit, and in a single year, about 1910, loss from decay in transit to the industry was a million and a half dollars. Local associations have taken over the picking now; it is all done by trained pickers under watchful foremen, and most of the decay in transit has been eliminated. Individual growers could not afford to have their fruit picked as it is today, cooperatively.

The local associations quite early adopted brands for which they gradually earned good will in certain markets, by always insuring that only quality fruit was packed under the brand. This fortified their position in the markets and led to better prices. A general Exchange brand was not adopted until 1907.

And, also, the pack became more uniform. A small grower, attempting to operate alone, would find it difficult to insure only fruit of a certain size and quality being packed in a given box. Pooling the crops of many growers and reducing grading to a system

resulted in much better packs, and this, too, strengthened their position with the trade. A reputation for uniform, quality goods is of infinite value in marketing anything. The locals learned this early and logically aimed at such reputations for their brands.

BENEFITS TO BEEKEEPERS.

Now, it is for the beekeepers themselves to study out the various ways in which local organizations would be of benefit to them. Only a few would occur to an outsider unfamiliar with beekeeping.

Beekeepers prepare their honey for market. I have no doubt that a system for doing this cooperatively, where a number of beekeepers are in the same community would not only result in a money saving right on the ground, but would result in a better pack. There are today few packs of agricultural products that could not be much improved, and improved pack means higher price and market prestige.

Then, in the selling there should certainly be a profit from cooperation. If a farmer has honey as an insignificant side-line why should he devote any time to selling it, when one man in the community could sell the honey of a dozen farmers in the same time he could sell only his own, and cooperatively it would probably get a better price? Where the buyer comes to the producer the price paid is notoriously the lowest. Where the producer goes to market and knows how, he gets the best price. A farmer can't travel to a distant market with a few cases of honey. But when a carload is involved that is a different story. A man told in a recent issue of the Bee Journal of going from Texas to Tennessee with a carload of honey, and he knew how to market it and got high prices.

There should be many minor benefits from local associations. Keepers of cows hire cow testers cooperatively and save a lot of money each year by disposing of their least productive cows. They could not afford to hire cow testers, individually. Farmers build grain elevators cooperatively and thus handle their grain at a little above cost, instead of paying extortionate prices as they once did to the elevator companies. They operate cooperative stores and cooperative creameries successfully. University farm investigators in Minnesota have reported that farmers handling their cream through cooperative creameries are realizing 5 to 8 cents per pound more for butter fat than are farmers who sell independently.

In marketing, the writer has been convinced by a rather careful study of the farmer's methods both in organizations and on the outside, that the difference between individual marketing and cooperative marketing of agricultural products is the difference between doing things wrong and doing things right. There are exceptions, but the farmer is essentially a producer, not a marketer. The more he can specialize on production the better; but he can't specialize on production as long as he tries to do this marketing all by himself. Marketing is too big a problem. By association he relegates his marketing to another person who, because

he is marketing for many, can afford to specialize *marketing*. Thus both production and marketing are done by specialists and are done right.

Of course, while there are numerous benefits from local cooperation, there are certain additional benefits when several locals get together, purchases in larger quantities, shipments in larger units, a bigger market control, etc., and as associations gradually assume control of a whole industry's output it becomes ideal.

The beekeepers, where enough of them are in a single community, should by all means work out a cooperative plan for themselves. Many of these locals will form the basis for something bigger in future years.

Chicago, Ill.

[Mr. Gano seems to have taken Dr. Bonney's estimate of not to exceed 200 extensive honey producers seriously. The Doctor was either joking or had not investigated the matter or he never would have made such an estimate. There were more than 70 producers present at San Antonio recently when the Texas cooperative association was organized. There are several limited sections where more than that number of extensive producers are to be found. The honey-producing industry is much greater than it is generally supposed to be and is capable of marvellous expansion.—EDITOR.]

The Sectional Hive

BY W. F. GEDDES.

(Second year thesis in the Ontario Agricultural College.)

THE sectional hive is not the particular invention of any one man, but is a growth, or, as the scientists say, an evolution from the hives in use, particularly the standard hive of today, the Langstroth. Shallow or "eke" hives are nothing new, as they date back to the 18th century at least. In the evolution of the hive the eke followed the box type. Some beekeepers having noticed that bees place their honey at the highest part of the hive added an upper story. Later the hives were divided into several horizontal sections called "ekes." The eke, of course, had not movable top-bars, and the first ekes were made of straw, but in 1821 Radouan, a beekeeper, introduced ekes of wooden structure. In 1845, Chas. Soria, invented a straw eke, in which he used triangular bars at the top and bottom of each story, placed a bee-space apart so that the sections could be removed, exchanged, or reversed without crushing the bees or damaging the cells. Just as the eke has developed from the box-hive so has the sectional hive of today developed from the Langstroth.

While it is very important to have good well-made hives for the bees, their importance must not be overestimated. A good swarm of bees will store as much honey in a nail keg as in the most elaborate hive made, other things being equal. Beekeeping con

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sists in understanding bee nature, and the hives are only our tools.

The question of the selection of a hive must be left with the individual himself. He or she must study the conditions prevailing in the locality, and adopt a hive suitable to their requisites. For the average man, or the farmer beekeeper, the standard Langstroth is probably the best; but if one has had considerable experience with bees and wishes to manage a series of outyards for the production of either comb or extracted honey, with a minimum of labor, he would possibly do well to look into the merits of the sectional or divisible brood-chamber hive.

There are many types of sectional or divisible brood-chamber hives. These hives are shallower than the Langstroth, but the frames are generally close-ended and standing. In the sectional hive introduced by James Heddon in 1885, each section consists of eight closed-end close-fitting frames $5\frac{3}{8}$ inches deep by 18 1-16 inches long supported at the bottom by strips of tin on the ends of each section. The whole set of eight are squeezed firmly together by means of thumb-screws as shown in the photograph (Fig. 1). The

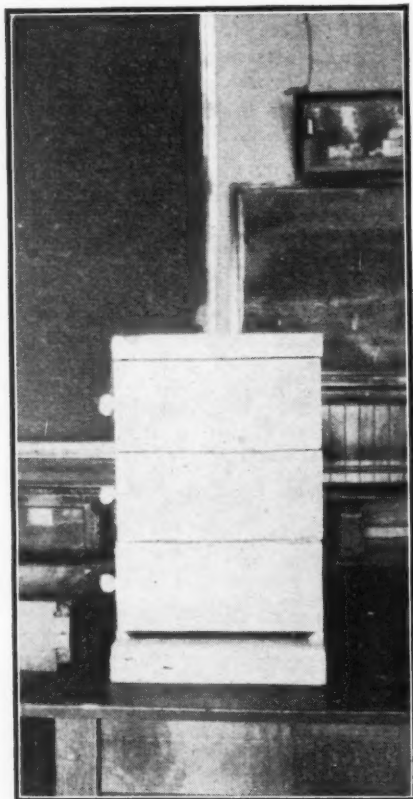


FIG. 1.—THE HEDDON SECTIONAL HIVE

bottom-board will be seen to have a raised rim on two sides and an end to allow for a bee-space under the brood-chamber.

In another type known as the Danzenbaker hive (Fig. III and IV), the frames are $7\frac{1}{2}$ by 17 inches; the hive holds ten frames, and they are crowded together by a follower. On the inside of the ends of the hive a cleat is nailed, and on this support the closed-end frames hang, being pivoted at the cen-

ter of the end-bars by means of a rivet. This allows the frames to be reversed.

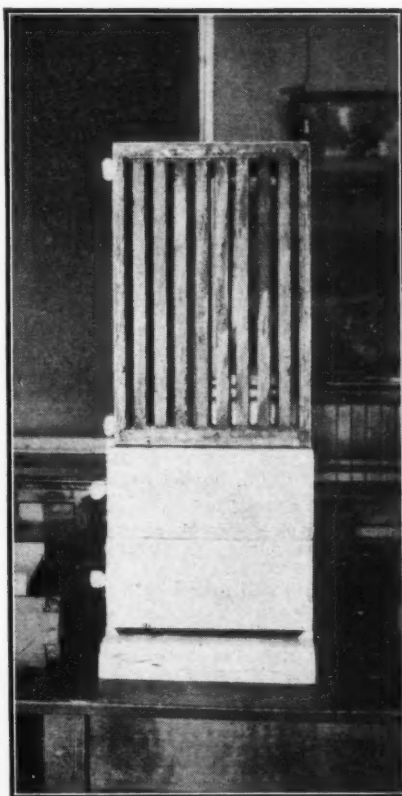


FIG. 2.—THE HEDDON SECTIONAL HIVE—UNDERSIDE

The sectional hive used by J. E. Hand is similar to the Heddon in principle. The frame is $4\frac{1}{8}$ inches deep by $17\frac{1}{8}$ inches long. Instead of thumbscrews one side of the section is made with a removable follower board which is held in place with Van Deusen hive clamps, but this follower board is only three-fourths the depth of the section. The remaining space is taken up by a permanent wooden strip which holds the ends and sides in position.

The type of divisible brood-chamber hive which is used by Louis H. Scholl (Fig. V), consists of the ordinary shallow extracting supers $5\frac{3}{8}$ inches deep. It is fitted with Hoffman frames $5\frac{3}{8}$ inches deep with $\frac{1}{2}$ -inch top-bars $\frac{7}{8}$ inches wide. All the sections whether for brood-chambers, extracted honey

or comb supers are alike.

The principal claim made for the sectional hive is that nearly all the necessary manipulations are performed by handling the sections of the hive instead of the frames individually. This necessarily entails a different system of management from that followed with single brood-chambers. Unless this is understood and taken advantage of it would be folly to use divisible hives because it would require more work to obtain the same results that could be obtained with single brood-chambers. Perhaps one may say that this principal of hive manipulation may be applied to other hives. That is true, but at the same time not so easily or so well. There is quite a difference between handling shallow chambers all day and deep ones. The ease of handling the sectional hive makes it particularly adapted to lady beekeepers.

This hive is also claimed to possess the particular advantage of being a large or small hive at the option of the owner. It can be enlarged for the strongest colony or reduced in size for the weakest. It also permits of a more gradual expansion to keep pace with the increasing size of the colony. Sectional hive beekeepers claim that bees do more and better work if less room is given at a time, and given oftener; also, the room given is in the most accessible form for use, shallow and spread out wide, as near to the brood-chamber as it is possible to get it.

Louis Scholl says: "A satisfactory hive must be so constructed that it can

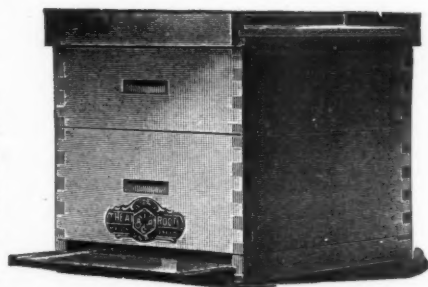


FIG. 3.—THE DANZENBAKER HIVE

be enlarged or contracted at will, and this can hardly be done with the Langstroth." The force of this claim comes home during the early breeding season when a large hive is often necessary to give room for the rearing of a large number of workers; and, again, there may be a colony, in early spring, not

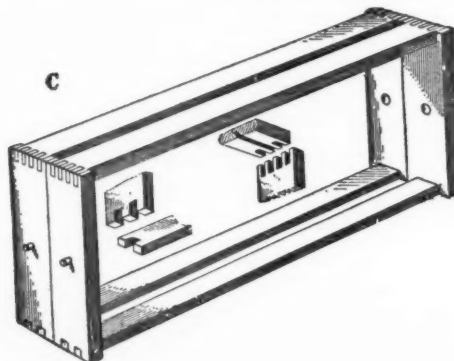
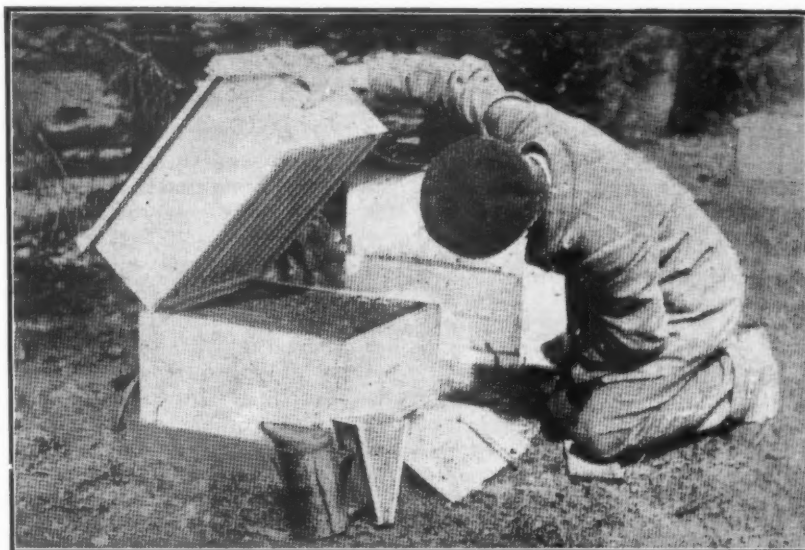


FIG. 4.—THE DANZENBAKER FRAME

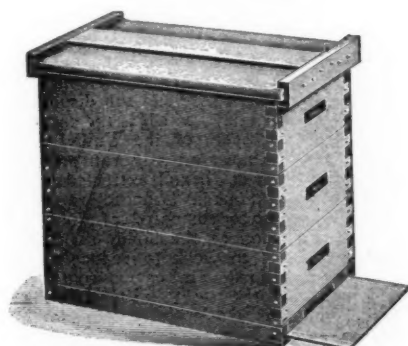
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even able to occupy one section of the brood-nest. This also applies to strong colonies in short flows and bad years. Some beekeepers state that when the ordinary shallow extracting super is used there will be just as much honey obtained under such conditions as with the sectional hive. The disadvantages of this method, however, are that all parts are not interchangeable, and a comb of honey cannot be taken out of the brood-chamber and placed in the extracting super; also, there are two sizes of supers, two different sizes of frames, and different sized sheets of foundation to buy. In the sectional hive every part is interchangeable.

The interchangeable feature of the super and brood-chamber on sectional hives is said to enable colonies to build up faster in the spring and to render the stimulation of brood-rearing much easier. Usually a colony is wintered in two sections (which have a capacity about equal to a ten-frame Langstroth). These two sections are usually large enough for the early part of the breeding season; the upper section is filled



OBSERVING THE CONDITION OF A COLONY WITHOUT REMOVING FRAMES



Shallow Hive Complete.

FIG. 5.—LOUIS SCHOLL'S HIVE

with brood first, then the sections are transposed. The devotees of this hive claim that it is surprising to see how soon the queen will now fill the transposed combs with eggs.

Many sectional hive beekeepers first adopted this style of hive because they found that the bees, in deep hives, very often store a rim of honey above the brood in the brood-chamber. Once this has been done the bees are loath to go up and work in the supers. With the brood-nest in two shallow stories the sections are transposed and the rim of honey thus kept away from above the brood. Beekeepers who use the divisible brood-chamber hive say that the expansion of the brood-nest upwards is in keeping with the nature

of the bees, and produces better results, as the same amount of heat generated by the bees will warm a much larger area above than at the side of the brood-nest. As to the stimulating feature, the transposing of the shallow stories before the honey season begins is claimed to be one of the very best ways of stimulating the queen to greater egg laying.

With the deep frame hives this manipulation is also possible, but it involves more labor and the prevention of the swarming fever (it is claimed) cannot be so well accomplished. There are several objections offered to this transposing feature of the hive by beekeepers who have tried it. In the first place they claim that they have no trouble with a rim of honey along the top of the frames in this brood-chamber. They also claim that this storage of honey is due to the stretching of the cells along the top-bar caused by improper wiring, which results in the foundation sagging and stretching the cells. These stretched cells are only suitable for the storage of honey. They also found that exchanging the two brood sections does not always result in forcing the honey along the top-bars into the surplus boxes. It works reasonably well, they say, providing the change is made before the honey is sealed; if it is sealed the bees will remove very little except in two or three central combs. It was also stated that the queen, in spring, is slow in crossing over from one section to another to lay and start a brood-nest there.

E. Eggeman says: "Scores of times I have seen enough surplus bees to cover and nurse a Langstroth frame of brood, clustering in bee-way spaces and empty combs for a week or more waiting until they get strong enough in numbers for the queen to start a patch of brood in that part. After steady warm weather I could see but little difference between the Langstroth and the sectional hive as to the amount of brood cared for."

[To be continued]



FIG. 6.—ONTARIO AGRICULTURAL COLLEGE SHOWING HEDDON HIVES IN THE FOREGROUND

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Angry Bees

BY ELVIN M. COLE.

PROBABLY most beekeepers have noticed how savage a nucleus often is when in possession of queen-cells; I don't know if this is true of baby nuclei, but in the strong 2 and 3 frame nuclei in which are hatched the few queens I rear they are sometimes almost unmanageable with any amount of smoke.

Mr. G. M. Doolittle mentions this on page 48, in "Scientific Queen-Rearing," but I do not recall ever seeing it mentioned that these same bees become as gentle as usual when the cells have hatched; and this explains, I believe, the remarkable change sometimes noticed in the temper of cross bees when requeened from gentle stock.

Miss Emma M. Wilson gives an instance of this in the Bee Journal of February, 1914, page 47: "The colony was already queenless, a new queen of best stock was given, and the temper of that colony began to improve immediately, not even waiting for the new generation of bees." It hardly seems possible that the new queen could influence the temper of the colony except as her bees hatched and replaced the original stock. I believe such colonies are trying to supersede their queen, and when the cells hatch, or they are supplied with a good queen their temper improves.

Here is my reason for thinking so: On June 1, last year, I received a queen by mail; a fairly strong colony was dequeened, the new queen clipped and "smoked" in. A few days later, wishing to use some of her brood, I opened the hive and the bees came at me with such vindictiveness that they nearly drove me to cover. Their fury reminded me of some of my nuclei with queen-cells, and I concluded that they had cells and were superseding the queen; an examination proved this to be the case. I kept the cells cut out of this colony for more than two months, the bees continuing so ill-tempered all this time that I came to dread opening the hive. The queen was not nervous, and on more than one occasion I watched her deposit eggs in the cells while I had the comb out of the hive.

On Aug. 18, I opened the hive and failed to receive the usual welcome. The bees were as gentle as could be desired and required almost no smoke; so much did they remind me of a nucleus in which a queen-cell has hatched that I felt sure I had missed a cell and a queen had hatched. The open cell was soon found and later the young queen.

I have been re-reading some of the back numbers of the Bee Journal, and in the May number, 1914, page 168, I notice the following: "But I beg to call his (Dr. Brunnich) attention to the fact that the male bees are not attracted to the queens by odor, but by wing sound." I will admit I don't know just how the drone is attracted to the young queen, but the virgin queen may occasionally be seen playing in front of the hive with the other young bees, flying back and forth, making plenty of wing sound, but not attracting the least attention from the drones.

This doesn't prove that they are at-

tracted by odor, but it doesn't help the wing sound theory any, and leaves it reasonable to suppose that the drone is not attracted to the young queen until sexual odor is developed.

Audubon, Iowa.

[Our correspondent gives evidence of a careful perusal of the varied experiences and statements published in the American Bee Journal, while doing practical work and making remarks himself. Let us have more of this, all around.]

Concerning the different theories on the manner in which the bees, workers, queens or drones recognize each other, is it not likely that all the organs of these highly developed insects are used in their relations to each other as well as in their search for food? Is it not most reasonable to surmise that sight, odor and sound serve in their recognition of each other, as sight odor and taste serve in their search after food? —EDITOR.]

Moving Bees By Rail

Spring Dwindling—Conditions in Northern California—Beemen Hard Hit

BY J. G. GILSTRAP.

SLIGHTLY over-crowded ranges for bees, together with my fast failing health in Stanislaus Co., Calif., where I had resided about 20 years in the bee-business, and 20 years in Tulare and Fresno counties, 10 of which were in beekeeping pursuits, determined me to move to wider fields. So on Feb. 1, 1916, my oldest boy, 15 years old, and I started from Keyes, Stanislaus county, with one carload of bees and one carload of extras; household goods, team, implements, etc., billed for Montague, Siskiyou Co., Calif., a distance of over 300 miles.

READY FOR SHIPMENT.

I had had my bees prepared for shipment by leaving all two story high, the brood-nest and super well cleated together with four common pine house lath strips, two on each side near the corners; screen covers made from screen just the size of the hive, then with laths I made a rim, two thicknesses of laths with the screen placed between, and then with 2-penny nails, firmly nailed and clinched, this rim made a neat but firmly built screen cover for each hive. About 450 in all were loaded on the car. The entrances were closed with lath strips. The screen covers were fastened on with ten 4-penny cement nails, three to each side and two to each end.

When placing in car we put the back of the hive to back end of the car, one tier across, and then nailed 1x4 pieces on top of the hives, one at the front end and one at the back end, then another tier of hives, and so on, finishing up in the center of the car where all were firmly wedged and braced. The hive lids were piled on top above the

cross slats of the hives. The car end window ventilation and each side door a little ajar. Two days, and a little over, landed us at our destination.

OUR FIRST TROUBLE.

I had paid, on loading, the approximate charge of \$98 per car, or \$196 for the two cars, estimated at the minimum rate of 20,000 pounds per car. On the road my cars were rolled on the scales, and at my destination I had a gentle surprise handed me. They called on me to "cough up" \$126.50 more freight. Say, brothers, there may (?) be lots of fun in moving bees by railroad, but let me tell you, if you live in the West, it is an expensive luxury. Counting my screen covers, cleats, lumber and hired help at each end, and the railroad fare of my family that followed about a week later, my move cost me \$450.

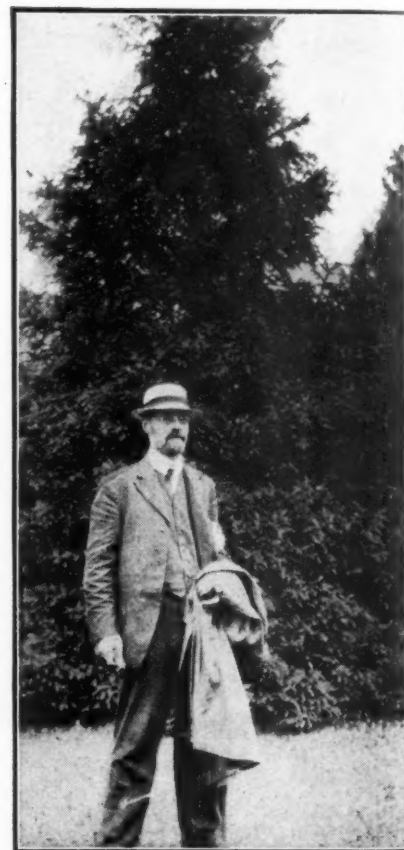


FIG. 86.—F. W. L. SLADEN, DOMINION APIARIST OF CANADA BEFORE A SPRUCE TREE ON THE COLLEGE GROUNDS

However, we landed in good shape with only a loss of two colonies; they having "leak holes" allowing the bees to escape.

The territory around here is rather in patches, and the best locations were taken before my arrival, so I had to scatter mine. I have eight locations, twice as many as I had hoped to require to give my bees room, and they are so scattered that it takes 57 miles of continuous driving to reach each apiary and return home.

UNFAVORABLE SEASON.

This spring has been the worst ever

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known in this part of the State, cold, windy and frosty. The first crop of alfalfa was nearly all ruined. Bees ran short of stores and feeding had to be kept up until the last of May, and I fed some yards until late in June, but on July 1 some nectar started, and at present (July 22) there is a fair flow of alfalfa and sweet clover, some white and red clover.

The cool spring and scattering clouds had caught so many field bees out that it gave the worst "spring dwindling". I ever experienced in 30 years of bee-work, and now many colonies are not yet strong, to say nothing about 75 colonies that died. I only know of one way that I could have saved them, and that would have been to clip their wings so they could not leave in search of honey or pollen.

Say, brothers, if you "evolute" a good variety of wingless honey bees to use to keep up the "spring count" on colonies, so as to stop this *everlasting* spring dwindling, let me know and I will send you an advance order for 200 of the queens.

If the balance of the season runs as it has for the past two weeks, northern, and extreme northern, California will produce about 60 percent of a normal crop.

HANDY HIVE TOOL.

Among the many hive tools I have used is a pocket knife, butcher knife, case knife, corn knife, hatchet, hand ax, planer blade, broken seat spring, screw driver, wood chisel, sheep shear blade, putty knife, and several varieties of home-made and standard factory-made hive tools, but the best all-around hive tool I have yet found is a brick mason's trowel with about one-third of the blade cut off, leaving it about five sided; that is, what is left is five sided, and grind it sharp. It is just the thing to open hives, pry off cleats, scrape wax off from the tops of frames, scrape out hives, wax and dirt off floor after extracting, cut caps out of cans, and if you wish, turn your flap jacks with when in camp at outyards, as well as to pry out frames in the hives. They are all steel, hold edge well, and have a good round end handle that doesn't hurt the hand. Try one.

Montague, Calif.

No. 20.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(Photographs by the author.)

FOR years past there has been an occasional mention of spruce honey or of bees working on spruce in our beekeeping literature. As far as the writer has been able to ascertain this is true only of the Norway spruce, *Picea abies*. Since the Norway spruce is not a native to this country, it is seldom found in considerable numbers except in the vicinity of cities where it is planted freely for ornament. (Fig. 86-87.)

It was at the Ontario Agricultural College at Guelph that the writer first saw the bees working on spruce to any extent. It was about June 12, and the bees were humming through these

trees in large numbers. There are hundreds of these trees about the college grounds, and considerable honeydew seemed to be coming to the college apiary from this source. Honeydew is seldom desirable, as it is usually of poor quality and only serves to spoil the quality of good honey. However, this spruce honeydew seemed to be of rather better quality than is generally the case with honeydew, and, as it came ahead of the clover flow, was probably nearly all consumed for brood-rearing.

Mr. F. W. L. Sladen, the Dominion apiarist of Ottawa, was present at the college where he was giving lectures at the summer school. He, together with the writer, took much interest in the spruce. For a time we were puzzled to know whether the bees were getting an exudation of sap from the tree, or were in fact getting honeydew. They were working on what appeared at first sight to be buds at the base of the new growth, but which under the microscope proved to be scale insects.

Mr. Sladen took the matter up with the entomological department of the college and the insect was identified as *Physokermes picea*.

Atlantic, Iowa.

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Beekeeping as a Prison Industry

BY O. H. L. WERNICKE.

BEEKEEPING as a prison industry within my knowledge affords no precedent beyond the experiments now being undertaken by Warden Nathan F. Simpson, of the Michigan State Prison at Jackson, under the supervision of the Board of Control, of which the writer is chairman.

Until 1911, Jackson Prison with 700 inmates, was conducted under the so-called "contract system" in making sundry products, including chairs, small implements and other things, with the exception of about 100 men employed in the manufacture of binder twine on State account, authorized by the legislature in 1907.

In 1909 the legislature passed an act prohibiting further contract industry with the expiration of then existing agreements and requiring the employment of all inmates on State account thereafter.

Under the old system the contractors paid the State so much per inmate and obligated themselves to employ a given number for a definite period. In the nature of the case this plan resolved itself into a matter of exploiting



FIG. 87.—A CLUMP OF NORWAY SPRUCE ON THE GROUNDS OF ONTARIO AGRICULTURAL COLLEGE

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convict labor for the profit of contractors, resulting in practices neither reformatory in principle nor profitable to the State. The present management, by establishing a variety of industries, now provides more useful and reformatory employment to the unfortunates under its care with manifest advantage to all concerned; and as a result, an annual deficit approximating \$90,000 has been turned into a profit.

There are now over 1000 inmates in the institution who are more than self-sustaining. The management has drawn no State money for current expenses for several years, has accumulated a surplus and is permitting the inmates to earn and receive substantial sums for themselves.

Among the industries carried on are farming, which involves nearly 3000 acres of land, mostly owned by the State, employing several hundred inmates who live on the farms in dormitories or are provided from the institution under proper supervision; but in the main, all farm hands work on honor much the same as free men, and this plan is being extended as rapidly as circumstances permit. The farm industries include stock raising, dairying, chickens, meat, fruit, gardening, and supplies all the food consumed excepting salt, pepper, tea and coffee and some sugar, although sugar cane is raised for syrups used in cooking and otherwise.

Much building, ditching, draining, tiling, clearing, fencing and other permanent work is being done. Most of the tools and much of the machinery used are home-made, including wagons, sleighs, harness, horseshoeing, general repairs, etc. There is an up-to-date sanitary canning establishment through which surplus farm products are preserved and marketed involving huge sums; these include peas, beans, apples, berries, beets, corn, sauerkraut, cider vinegar, jellies, and many other items.

There is also a stone shop where many inmates are employed and become skilled artisans in stone craft, such as making monuments and the like. A tile and brick plant employs a large number, and is supplying high grade building materials for the institution as well as to the citizens of the State.

Then there is the twine plant, which last year produced over 12,000,000 pounds of sisal twine not excelled in quality by any free industry in the world. A chair factory employing several hundred inmates, a broom shop, printing plant, tailor shop and many other activities which go to make the institution very nearly independent of outside industries, including the manifold activities of preparing food, clothing and other necessities for the institution.

As a cap stone to these varied industries and activities there is the prison school and its curriculum devised to facilitate and supplement the practical knowledge gained by work in the vocational industries. This is not only a school in name, but in fact, teaching all grades up to the 12th, and its certificates given under the supervision of the State Board of Public Instruction, admit to the University, Michigan Agricultural College or School of Mines.

With the foregoing in mind, you will grasp the purpose in the minds of the authorities when it was decided to add apiculture to the other prison industries. No industry, unless it is conducted on a profitable basis according to the best standards prevailing in successful free industries, is either instructive or reformatory; and therefore fails in its purpose as a desirable State account prison vocation. Whether bee-

culture will justify our expectations on this basis cannot at this time be foretold, but it is hoped that the members of your association and all other beekeepers everywhere will lend us their helpful support to make it a success, so that the State apiaries at Jackson Prison may become model institutions of their kind, affording examples of profitable beekeeping.
Jackson, Mich.

BEE-KEEPING



FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Cellar Wintering

For years we wintered in a cellar which, left to itself, was too cold for best results with bees. So to keep it near 45 degrees, which at that time was supposed to be the orthodox temperature, we kept coal fires going in the cellar during the coldest weather.

We succeeded in wintering pretty well with this arrangement, too, but when the furnace supplanted stoves it was impossible to keep the temperature as low as 45 degrees, it often going as high as 50 degrees, and sometimes even 60 degrees, though the furnace-room was separate from the bee-room. In order that the bee-room might be kept cooler the outside cellar doors which open into the furnace-room were left open, most of the time, and the door from the bee-room into the furnace-room was left open practically always, so the bees had plenty of fresh outdoor air all of the time except in the very coldest weather.

At first we were somewhat anxious as to how the bees would winter with the furnace. With higher temperature and greater activity they consumed more stores, making it necessary that they go into winter quarters with heavier stores than previously. Since the installment of the furnace the bees have wintered better, coming out in the spring stronger and in better condition. The bees look brighter, the hives and combs are dry, never any wet or moldy hives or combs, and very few dead bees on the bottom-boards, often none. Either the bees clean out the dead or they leave the hive to die on the cellar floor. We no longer know what spring dwindling is; and it surely is a comfort not to have to doctor up weak colonies in the spring.

The question as to why bees winter better in a cellar with a furnace was for years answered by saying that they wintered better because of the greater amount of fresh air in spite of the too high temperature.

Since Dr. Phillips very thorough experiments upon wintering bees, we may now say that bees winter better in a cellar with a furnace, not only because of the pure air, but because of the higher temperature. In his book, "Bee-keeping," Dr. Phillips says, page 347, "The majority of beekeepers consider 40 to 45 degrees Fahr. as the cellar

temperature, but it is clear that the temperature can usually be raised to at least 50 degrees Fahr. with beneficial results," and on page 353 he says: "In general a cellar temperature of 50 degrees Fahr. or higher, results in a saving of the vitality of the bees."

Results of Excessive Swarming

In the fall of 1914 we bought six hives of bees and wintered them in a log building where they were sheltered from the winds and snow, but had plenty of light and ventilation.

In the spring of 1915, when we took them out-of-doors, one hive seemed to have lost its queen. The bees of this hive were united with another one.

Some of the colonies swarmed several times during the season, but we lost every swarm. The bees left in the hives very little honey, and this spring some of these colonies were dead.

Here in Marinette Co., Wis., there is basswood, acres of white clover, hundreds of acres of red clover and alsike; wild berry bloom everywhere; also fields of buckwheat. An ideal place, it seems to me, for honey production.

Could you through the columns of your journal give me a solution of this problem? Could there be moth or any sickness among the bees? Is it too late to get a queen for a swarm of bees? [Mrs.] LUCY L. FERGUSON.

The trouble was that your colonies "swarmed themselves to death." You should never allow a colony to swarm more than once. It is a difficult thing to prevent prime swarms, but comparatively easy to prevent afterswarms. When the first, or prime, swarm issues, hive it and set its hive on the old stand, setting the old hive close beside it. A week later move the old hive to a new stand two yards or more distant—that's all. The bees will do the rest, for all the field-bees that go from the old hive to gather nectar, will upon their return go to the old location and join the swarm, thus weakening the old colony so much that they will give up all thought of swarming. Neither will this lessen your honey-crop, but rather increase it, for the swarm will store so much the more.

With the pasturage you mention, bees should do splendidly, but they must not be allowed to waste all their

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energy in swarming.

A queen may be introduced almost any time when bees are in flight, and there is no better time, other things being equal, than near or after the close of the honey harvest.

Bees Hanging Out—Ventilation

An Illinois sister writes:

Please say what causes bees to hang around entrance, with good ventilation and shade the hottest part of the day. I have a colony that has done this for two summers. They will fill brood-combs with honey, but will not work at sections in supers. They were treated for foulbrood early in the season, but are strong now. This is the second year. Ought I to requeen?

Do you advise the cover of hive to be raised a little for better ventilation on hot days?

Do you advise crossing with other strains of bees?

Mrs. V. A.

When bees hang out at the entrance in considerable numbers, it is generally because it is too hot and close for them in the hive, or else because there is nothing for them to do in the fields. You say they have good ventilation, but it is just possible that you haven't as large ideas of ventilation as you might have. We give our bees ventilation by having the entrance two inches deep the whole width of the hive, also allowing $\frac{1}{4}$ -inch opening at the top of the hive at the back end. In the daytime there is rarely any hanging out, even when there is very little to be done in the fields, but in the hottest weather they hang out at nights. It is just possible that more ventilation would help in your case. Raising the cover might help, but sections near such an opening are often slow of completion.

You would probably find that one or more baits in a section-super would be a great help in starting the bees at storing. If you have sections that have been partly filled previously, that's just the thing for a bait. Even any piece of comb, old or new, put in a section in the middle of the super will do.

Yes, it is a fine thing to introduce a fresh strain of blood, provided it is better than what you have already, a thing easily possible in your case, for it looks a little as if the bees you now have are troubled with downright laziness.

Polk County Association Meets

The Beekeepers' Association of Polk Co., Iowa, held its annual summer meeting and picnic at Union Park, Des Moines Friday, July 28. The following program was given, after which a business meeting was called. At this meeting the officers were elected for the coming year and routine business attended to:

Addresses by A. L. Clinite, of Des Moines, and Hamlin Miller, of Marshalltown. Readings, Misses Alice Hoare and Vase Crow, of Des Moines. Folk games, by children. Demonstrations were given in queen clipping, shaking to prevent swarming, and extracting of honey.

BELLE MCCONNELL, Sec.

The Social Side of the Honeybee

One cannot ride a hobby horse for long without offering a lift to wistful pedestrians or being overtaken by other riders on similar steeds, until quite a company is collected. In such wise the Los Gatos Bee Club was formed, and now our various steeds are engaged in a friendly race along the by paths of bee-culture, of which the study of honey flora, queen-rearing, increase in colonies and honey production are among the most popular.

The Club is somewhat loosely organized, its members being called together now and then by its one officer, Dr. Annie M. Anderson, secretary. There is no regular place of meeting and no financial obligations except to be present on the rare occasions when the hat is passed for postage. The Club, judging from the meetings which in fair weather are held at the apiaries of the different members, is a sort of clearing house for ideas either original or gathered from bee literature, as well as the weird and wonderful experiences of the members.

One enthusiast with an artistic eye, proudly exhibited a brood-frame filled with pollen in which the reds, blues and yellows had been blended by the bees into a mosaic of the most exquisite pastel shades; another can hardly make and paint hives fast enough for his increasing colonies; another has taken 100 pounds of comb honey from a single hive—a phenomenal yield in a locality that has no special honey flows, but where, on the contrary, the nectar

is secreted in small quantities from a variety of plants and shrubs both cultivated and wild, almost every month in the year; and still another member has reared a number of fine Italian queens.

At the June meeting of the Club a practical demonstration of queen-cell grafting was conducted by Dr. Anderson, who, by the way, has discovered a safe method of approach to the most belligerent colony. She merely says, "Now, little friends!" and calmly proceeds to business. Other members are trying out the formula.

C. D. STUART.

Clearly, this Club is not a one-man affair, but it looks a little like a one-woman affair, having a woman for its sole officer, and evidently depending largely upon her for its inspiration. It is easy to believe that when the Club gathers at the call of the leader a good time is had, baby and all.

It may be well to mention that Dr. Miller, as well as the conductor of this department, has for some time been using a hat very like the one worn by the lady in the center of the picture, only we do not have the veil sewed to the brim of the hat, but the veil is the common form of bee-veil, an open bag with an elastic cord at each opening, and the veil drawn down over the hat, the elastic cord fitting close at the place of the hat-band. When worn without the veil, the brim may be turned up, when the hat gives up its dejected appearance and looks altogether like a different hat. Cost 25 cents.

MISCELLANEOUS



NEWS ITEMS

Better Queens Produce Better Bees.

—Stencil Bulletin No. 11, of the Extension Department of the University of Wisconsin, under the direction of Prof. H. F. Wilson, declares that successful beekeepers have found that pure bees, better queens, clean honey, neat packages bring more honey, less disease, better price, larger profits. We quote from the bulletin as follows:

The most important individual in every colony of bees is the queen. Why? Because upon the queen you have depends the kind of bees you will get. Also, she is the producing factor, and the strength and vitality of each colony depends upon its queen.

We have asked many beekeepers, "What, in your opinion, are the requirements for a satisfactory strain of bees?" The answers received may be summed up:

Bees that will gather the maximum of honey and produce well-filled cells with clean, white combs and cappings; bees that build few queen-cells and do not swarm excessively; bees that do not require too much care; bees that are gentle and do not run on the combs; bees that keep their hives clean and do

not smear everything with propolis (bee glue); practically all of these answers include health, vigor and resistance to disease.

BEES, TOO, CAN BE BRED FOR PRODUCTION.

Is it possible to secure a strain of bees that have all of these good qualities without undesirable traits? Yes.

Through breeding and selection, the characters of plants and animals can be changed to meet any desire of the breeder. No character, whether it be desirable or undesirable, is so strong but that in time it may be improved or eliminated.

At present there are perhaps a dozen or more strains of the common honeybee, each one having developed under conditions that have given rise to considerable variation both in color and temperament. Phillips, of the United States Department of Agriculture, mentions four of these as having some desirable characters; the Italians, Germans, Carniolans and Caucasians. He has found that it is the almost universal verdict of American beekeepers that the Italians are the best.

WHY KEEP MONGREL BEES?

Settling upon this strain as the one having the most desirable characters,

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the next step would be to improve existing stock so as to approach more nearly to the qualities of the best strain. Fortunately, some of our queen-breeders have carried on a more or less selective process and, in general, both the leather colored and golden Italians have improved.

However, we cannot find that much, if any, real scientific work has been done in connection with the different strains, and for the most part, bees are just bees, sometimes blacks, sometimes hybrids, and frequently Italians. As a result of these conditions, mongrel stock is to be found to a more or less extent in all sections of the country, and it is a continual menace to the industry.

Too much stress cannot be placed upon getting rid of queens in weak or sickly colonies and on providing new queens for colonies that are not resistant to disease. Similarly, a new queen should be provided for a colony that is cross, or in any way undesirable. The beekeeper who has queens that are strong and vigorous, and whose bees are good producers, should use her daughters in place of less desirable stock.

California Honey Sale.—The sale, June 28, by a Pasadena apiarist of 32 tons of extracted honey at 7½ cents, doubtless records the high-water mark of both production and sale for this year.—*Western Honey Bee*, July, 1916.

A Better "Bee Cutting."—The usual bee tree party simply robs the tree late in the fall and leaves a helpless but useful swarm to starve to death. It is much better to have the "bee-cutting" much earlier in the season when the swarm may be transferred to a good hive, moved home, and allowed to store enough honey to keep itself through the winter. If there is not a favorable fall for honey gathering, it may be necessary to feed this swarm through the first winter, but a good swarm is well worth it.

Students at the Missouri College of Agriculture were recently shown how to do this. They were equipped with an ax, a saw, a few bee veils, a good hive, and a basket of tools. The basket contained a few feathers, a buggy-spring hive tool, a putty knife, two butcher knives, a few slender wood splints and a smoker.

After the tree was cut the boys sawed into the trunk just below the knot-hole used by the bees as an entrance and made another cut about eight feet above the first one and a third cut about half way between these two. The bees were then transferred to the hive and the hive moved to this permanent location in accordance with directions found in Experiment Station Bulletin 138, entitled "Farm Beekeeping."—*Press Bulletin*, University of Missouri.

Honey Extractors at the Royal Show, Manchester, England. As usual the honey extractors were a puzzle to those who are entirely ignorant of beekeeping, or appliances for carrying it on. We not only heard one again described as a churn (one man remarking "it would soon fetch butter," as it was

"geared up to 90"), but one man enquired of an attendant if they were "fer weshing (washing) pertaters." A member of another group declared they were for mixing "dooah" (dough). Said he, "They hev these soooart o' things fer mixing dooah, they put in t' flaar an' watter an' barm, then thurn t' handel an' mixes 'em aul oop." "Nay," put in another, "they're weshing machines." "Nay," was the reply, "they cuddn't get a blanket in 'em sitha."—*British Bee Journal*, July 6.

Colony on Scales.—Mr. L. V. France, assistant in beekeeping at the University Farm at St. Paul, Minn., sends us the results of the weighing of one colony on scales during 31 days, from June 14 to July 15. It shows an increase of weight, maximum of 14 pounds 8 ounces on July 11, with an additional gain, instead of the usual loss of a few ounces, during the night, owing to the fact the colony was daily weighed at 7:30 p.m., and that on that day the additional increase of weight after 7:30 p.m., was honey brought until nightfall. The total net gain of the colony during the 31 days was 122 pounds, or nearly 4 pounds average. The heaviest net loss during a single night was 2 pounds 6 ounces, out of 11 pounds 6 ounces gain during the preceding day. The colony, at the end of the time, occupied five Langstroth 10-frame bodies.

Beekeepers could have a great deal better idea of the honey flow if each apiarist kept one of his colonies on scales and registered the daily gain or loss.

Tri-State Field Meet.—The second Tri-State Field meeting of the beekeepers of Illinois, Wisconsin and Iowa was held in Union Park, Dubuque Aug. 1 and 2. The meeting was

called to order by Mr. E. J. Baxter, of Nauvoo, Ill.

The excursion and luncheon given by the Commercial Club of Dubuque on the steamer Sidney, were greatly enjoyed by all who were present. This was given on the first day.

There were about 90 present, and 17 new members were secured for the Iowa Beekeepers' Association. The slogan for this association is at least 500 members enrolled by the time of the December meeting at Des Moines.

We were greatly honored by having with us Mr. C. H. Bocock, from England, who is the expert in apiculture of the British Beekeepers' Association; Dr. Phillips, of Washington, D. C.; Inspector N. E. France, of Wisconsin; Mr. Kildow, of Illinois; Mr. Blaker, of Minnesota; Mr. Pyles, of Illinois; and Mr. Elmore, of Iowa. Prof. Jager and his assistant, Mr. France, from the Agricultural College of Minnesota, were present and took part in the discussions.

Mr. Kildow took charge of the question box.

Mr. Bocock gave a very interesting talk on the Isle-of-Wight disease. He told of the spread of the disease by the wind causing the bees to drift, and of the great destruction of the bees over all the British Isles. It is certainly to be hoped that the disease in its malignant form will stay within its present bounds. It is not sure that any cases of the disease have been found in this country. The exact cause of the disease has not been found.

The question of weights and the price of honey were well discussed as was also the foulbrood situation. There seems to be a difference of opinion in regard to the smell of European foulbrood, and it is quite certain that it has a distinctive smell of its own, differing from that of the American foulbrood.

A motion by J. W. Stine was made and carried to have a committee of one appointed from each State to bring before the Inter-State Commerce Commission the urgent need of the same classification of freight rates in the



JUNE OUTDOOR MEET AT LOS GATOS, CALIF.—(Photo by J. R. Douglass.)

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western States which is given in the eastern States.

A motion by Mr. France was made and carried to continue the present organization to be known as the Mississippi Valley Beekeepers' Association, and meet again next year some time during the first week in August.

The committee named to make arrangements for the next meeting was Mr. N. E. France, Prof. Jager, Mr. Kil-dow, and Mr. Hamlin B. Miller.

J. W. STINE, Sec.

An Announcement.—It has been the dream of beekeepers for many years to have honey so widely and thoroughly advertised that it would become an article of common everyday household use. This dream is now crystallizing into substantial form. The United Honey Producers are arranging to have the food value of honey and domestic use taught in the schools of the United States. Obviously there is no quicker way to popularize it than to educate our future housekeepers to use it in the best manner.

The school officials have been asked if they would assist in this, and in almost every instance they have agreed to do so, if suitable bulletins are supplied to the schools by the beekeepers. The United Honey Producers are arranging to do this, and will print them in quantities to supply all the schools.

This is a great opportunity, and as the editor of the Western Honeybee declares, "A grand idea, and no one interested in the production of honey can afford not to endorse it."

We will take it for granted that you do endorse it, but we want you to say so. Write to your vice-president or to the secretary and tell them so. It is planned to have one or more beekeepers in each county, and more when possible, to represent the United Honey Producers, and be ready when called on to give simple demonstrations before the pupils, to supplement the instruction and for other necessary work in connection with the United Honey Producers.

This is a matter of general importance as well as personal advantage to the county members, as it will bring liberal compensation to them in the way of prestige as representatives of the National organization. For the present these positions will be filled by volunteers, later they will be elective or be appointive.

The United Honey Producers will specialize on this policy, and concentrate its efforts in pushing it to a successful culmination. When its present plans are successfully realized, then it will take up some other things that are needed and carry them out. The discipline and organization that this campaign will bring will make possible other things.

Detailed information can be obtained by writing to your vice-president or to the secretary. GEO. W. WILLIAMS, Sec.

Apicultural Assistant (Male) \$1400-\$1600.—The United States Civil Service Commission announces an open competitive examination for apicultural assistant, for men only, on Sept. 20, 1916, at the places mentioned in the list

printed hereon. From the register of eligibles resulting from this examination certification will be made to fill two vacancies in this position in the Bureau of Entomology, Department of Agriculture, for duty in the field, at salaries ranging from \$1400 to \$1600 a year, and vacancies as they may occur in positions requiring similar qualifications, unless it is found to be in the interest of the service to fill a vacancy by reinstatement, transfer, or promotion.

The services of an apicultural assistant are desired in connection with extension work about to be undertaken in the South.

Competitors will be examined in the

following subjects, which will have the relative weights indicated:

Subjects	Points
1. Practical questions.....	40
2. Thesis (to be delivered to the examiner on the day of the examination) 20	
3. Education and experience.....	40

At least two years' experience with apiaries of at least 100 colonies, or two years' experience in apiary inspection service, or two years' experience teaching bee-culture in a college, is a prerequisite for consideration for this position. For particulars, blanks and nearest place of examination. Address, U. S. Civil Service Commission, Washington, D. C.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Different Kinds of Italians

In looking over the Bee Journal I find mentioned bright Italian bees, three-banded goldens and leather colored ones. Is there any difference in them? INDIANA.

ANSWER.—You have probably not often read of three-banded goldens. Goldens are generally supposed to have five bands. Perhaps leather-colored have the general preference. "Bright" may apply to bees lighter-colored than the leather-colored, although "bright" is often applied in a general way.

Cleaning Old Combs—Drone-Brood—Feeding

1. We bought a pound of bees and a young queen along in May. We put them in a hive of old combs in which bees had dwindled away during winter. There is some brood in the old combs that seems to be dead and dried up, and bees don't seem to work on it. Do you think it would be all right to uncap it and see if bees will work on it that way? What do you think we should do with this hive? They have some brood, but very little. We have tried feeding them from the top with entrance feeders, but they do not take it up very fast; it takes them about a week to use a quart. We also gave them four or five frames of sealed brood, which came out all right.

2. In our brood-frames we have cells that project $\frac{1}{8}$ to $\frac{1}{4}$ inch beyond other cells; they look like worker cells; otherwise what are they?

3. What is a good plan to make bees take sugar syrup? PENNSYLVANIA.

ANSWERS.—1. It seems a little difficult to understand how there should be sealed brood in a hive in which a colony died in winter, when generally there is no brood present. However, the bees should be expected to clean it out, but not so very much ahead of their needing it; that is, a weak colony need not be expected to clean out combs a considerable distance from their brood-nest. But it will be a help to them for you to uncap the dead sealed brood, and even to dig it partly out. Yet generally bee-work is cheaper than man-work.

When you gave four or five frames of sealed brood to a pound of bees, it is quite possible that there were not bees enough to cover the brood properly, and that much of it perished, for four or five frames well filled with sealed brood should make a pretty colony of itself. There is probably nothing you should do more to help along, for when

honey is yielding as it was at the time your letter was written, feeding is not at all needed, and will hardly do any good.

2. The cells that have their cappings projecting contain drone-brood, and if there is much of such work it shows the work of a defective queen.

3. It is no trick at all to get bees to take syrup when weather is not too cold for them to get at it, and they need it. But when they are getting honey from the flowers they care little for syrup made with sugar, and feeding at such a time is needless. When feeding at a time when bees are getting nothing from the fields, it is important to have the feed so near the brood-nest that the bees will not be chilled in getting to it. The warmer the weather the farther they can go for it.

Langstroth Hive—Increase—Not Working in Super

1. Is the hive patented which is made with a porch or portico in the front, grooved where supers and top fit on and having bonded ends? Would it be lawful for us to make some, for our own use, over the same pattern, with some changes? Could we sell a few of them?

2. We have 12 colonies and wish to increase from these. As yet we have had no swarms to issue. What is the best way to make them swarm without using extra queens or cells?

3. How can you tell that a swarm will issue soon, without examining the hive?

4. What would you consider an average swarm from an 8-frame hive?

5. What is a good way to get the bees to go to work in the super? We are running for comb honey, and have not been able so far to get them to work in the sections.

6. Is the enclosed queen, which I killed while trying to transfer her colony, a full-blood Italian or only a hybrid? How can you tell? OKLAHOMA.

ANSWERS.—1. The hive was covered by the Langstroth patent, which expired years ago, so you are at liberty to make, use, and sell all you like. But you will do well to leave off the portico, which is discarded nowadays because it makes a fine refuge for spiders.

2. It may tend to hasten swarming if you strengthen the colony by giving brood or bees, or both, from other colonies. Also to keep their room limited and to keep their entrance rather small. But you can take

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the matter into your own hands, and divide artificially. Full instruction for this will be found in Dadant's Langstroth and other good bee books.

3. You can't. You can, however, make something of a guess if the bees hang out somewhat idly when other colonies are busy at work.

4. At a rough guess, about a peck and a half. This while the bees are loosely clustered; for when they settle down quietly in a hive and cool off, the cluster will shrink in size.

5. Put in the super a section that has been partly or wholly built out. Even any old piece of comb will do.

6. She looks like a nice Italian queen, but you never can tell from looks. You can decide only from her worker progeny. If they all have three yellow bands you may decide the queen is pure.

Keeping Sections of Honey

What I am most interested in at the present moment is the best method to keep section honey. Ever since I have kept bees I have fumigated with sulphur about ten days after I took the honey off, which makes an endless job. Is there any shorter way?

Prospects were never better, but a good shower would help the white clover. Linden is just in bloom, but is about three weeks late for this locality. MISSOURI.

ANSWER.—Years ago I sulphured my sections soon after taking them off the hive, and then again about two weeks later. For years I have not fumigated them at all. The only thing I have done to make the difference is to get in Italian blood. Like enough there is too much black blood in your bees, and blacks are inferior at keeping the bee-moth at bay.

Eggs Don't Hatch

On May 6 a queen hatched, and on the 12th she began to lay quite freely, but the eggs do not hatch. I have failed to find the larvæ in any stage at any of the frequent examinations. The queen is a fine looking one and quite active. The eggs are deposited very regularly and there is plenty of honey coming in. What is the matter?

KANSAS.

ANSWER.—I don't know the answer. I had one queen of the same kind, and I think only one, and I have read of some others. The eggs just don't hatch, although everything appears all right, and I don't know why. Fortunately you're not likely to have another such case in your lifetime.

Cleaning Old Combs—Building Up—Swarming

1. How can old combs having larva and dead bees in them be cleaned up so they can be made into foundation?

2. At the beginning of the honey flow, before my bees started in the supers, they were very gentle, but after they started work in the super they would sting me, when I opened the hives despite the smoking I gave them. Is there a reason for this?

3. I have a few small hives of bees which I would like to build up. If I put frames of brood in them from larger colonies, would it be safe to add also the adhering bees?

4. I have kept my bees from swarming so far by cutting out queen-cells. I would like for them to put up all the honey possible, and then swarm. How soon shall I stop cutting out queen-cells to let them swarm in time to gather stores for their winter use?

MISSOURI.

ANSWERS.—1. Clean them up what you can conveniently, brushing off the dead bees, and then melt up dead bees and all; and when the melted mass cools, having plenty of water with it, you will find the impurities separated from the wax.

2. I don't know why there should be the difference, but I know that sometimes bees are much worse at stinging than others. Of course, when the flow stops suddenly, and

bees have nothing to do but to defend their homes, we expect them to be cross, but sometimes they are crosser with a full flow on than they are at others. There seems to be more complaint than usual this year.

3. You can give the adhering bees if you do not give too many at a time. If, for instance, you have a weakling with only two frames of brood, and you give it two more, with adhering bees, you will jeopardize the queen; but you may feel pretty safe if you give only one brood with its bees. The point is that in giving the bees they should not be more than half as many as those already in the hive. But if you make the bees queen-less two or three days previously, then you may add all you like.

4. Don't you worry; those bees will swarm in time enough in spite of all your cell cutting. There may, however, be some exceptions, and what time you should stop cutting depends on how late your flow is. In some places there are years when a swarm in July would not store enough for winter use, while in others a September swarm might make good.

Uniting—Artificial Increase

Have just read your book, "Fifty Years Among the Bees," and think it is the best book I have ever read. What would be your opinion of uniting swarms coming off at the beginning of the honey flow and keeping the number of colonies good by artificial increase? NEW HAMPSHIRE.

ANSWERS.—I suppose your idea is to unite two swarms so that the combined force will be stronger for storing. If your bees cannot be persuaded not to swarm then you will gain in surplus to unite two swarms, for the combined force will store more honey than would the two kept separate. Exception, however, must be made in places where there is a heavy flow late, for in such places, especially if the swarming be early, you will get more surplus by keeping the swarms separate.

A Boy's Questions

1. When transferring bees from a box to a hive, and when adding the bees in the old box to the hive, would an entrance guard be necessary so as to keep the queen out?

2. Would a queen-excluder be needed for producing comb honey?

3. Last summer I heard a noise in the hive that sounded like burnt paper. Do you know what it was? SUBSCRIBER.

ANSWERS.—1. No; I don't know of any reason why you should want to keep the queen out.

2. No, I never use any. But if no excluder is used it is quite important to have the section quite filled with worker foundation. Otherwise the vacant space will be filled with drone-comb, and the queen is likely to come up and lay there.

3. It was probably nothing but the noise of the bees. It is interesting to put one's ear against a hive in the still of the evening and listen to the various sounds made by the bees. Some of them sound like little squeals, and some a good deal like the crackling noise of burning paper.

Miscellaneous

1. When you take off your comb honey supers, and the season is about over, do you put on other supers? The swarms are too large to shut in the one story, and it seems that if given a super many of them would gnaw the full sheets of foundation down.

2. I shook three of my swarms that had cells capped over on empty or wired foundation, leaving an outside comb on each side, then set the brood on top over the queen-excluder for three or four hours I then carried the top hive away and gave them a queen-cell. In a few days they swarmed for three days in succession. They

came back the first and second time, but the third time they would have gone if I hadn't sprayed water on them. I then put on a drone-trap, and a few days after I saw a ball of bees like a walnut on the outside of the trap. I examined it, and found the young queen trying to get into the hive but couldn't, so I clipped her wing and let her in. How she got out through the trap I don't know. Why did they swarm that way; they had two full sheets of foundation in the 10-frame hive that hadn't done any work?

3. One swarm had cells started, so I cut them out and filled the hive with full sheets of foundation with the exception of one frame with brood, which I put in the middle with the queen, then put the brood on top over the excluder and in eight days cut out all cells. In a few days they swarmed, but as the queen was clipped they came back. I carried the top hive away and gave them a cell. Why did they swarm? Was it because I didn't put the queen below soon enough?

4. I have a swarm that was shaken early in June, queen clipped and brood taken away; they worked in the sections, but today they swarmed, making the second time they had tried it. Of course, they came back. What is the cause, and will they keep on until they kill the queen?

5. If they supersede their queen, when do they generally do it, and do they build more than one cell?

6. After a cell is capped, how long is it until the prime swarm issues?

7. Three of my 10-frame hives are painted a dark green. One had a very large swarm of hybrids with 56 sections nearly ready to take off, so I gave another 28 on top and lifted the bottom or tilted the hive up to look for cells and found none. About 2:00 o'clock in the afternoon and about 7:00 o'clock in the evening I found honey over part of the running-board with a pool on the ground. I examined them and found one outside the comb about half melted down. The hive was setting in the hot sun with a shade-board on top, and excelsior cover on top of the cover. Bees clustered out in front clear to the top of the third super, some drowned. The 3/4-inch entrance was wide open. Was it because of the dark paint or my working with them that caused this? Other hives being within six feet of them it must have melted in about an hour, or I should say three hours, after I left them or there would have been robbing started; but nothing of the kind happened.

8. Is it right to shake bees through the queen-excluder in hunting for the queen? It seems that part of my queens can hardly be found to be clipped in any other way.

9. How do you keep the wind from blowing your hives over where they are tiered as high as the bee journals picture them at times? OHIO.

ANSWERS.—1. No supers are allowed on the hives after the flow is over. If a colony is so large that the hive is too small for them, they can stay outdoors. Won't hurt 'em a bit. As soon as it is too cool for them outdoors they can crowd into the hives, and there will be plenty of room for them.

2. If I understand correctly, you set the brood-combs with a full complement of bees on a new stand. Their first business was to start cells, even if you had already given them a cell, and being strong they were ready to swarm as soon as the young queens matured. The swarms were practically afterswarms, just as would naturally be expected, for in the few days intervening before the virgins were ready to emerge the colony had been becoming stronger all the time. If, instead of leaving the bees over the excluder a few hours, you had left them for a week, there probably would have been no swarming.

3. I don't know. With the queen and only one brood below excluder I should not expect swarming. But bees sometimes break all rules.

4. They may keep on until the queen is killed, or they may give up. You might keep the queen caged in the hive 10 days, then kill cells and free the queen. Of course, however, that would not tend to strengthen the colony greatly.

5. Superseding is generally done toward the close of the season. Only one cell may be started or there may be two or more.

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6. The natural thing is for the swarm to issue as soon as the first cell is sealed.

7. Hard to say. The dark paint and your disturbing the bees may both have been to blame, and it may also be that ventilation of the surrounding air may have been too little on account of surrounding shrubbery or buildings.

8. Yes, such a practice is considerably in vogue.

9. Nothing is needed to keep them from blowing over. My supers are often piled six to eight high, with nothing put on top, and not one has ever blown over. There may be localities with such very strong winds that it is necessary to pile stores on top.

Swarm Control

My apiary consists of 30 colonies, and I have only had one year's experience. I am running for comb honey. Could you give me some advice on swarm control? I do not like to have any more increase. All my queens are clipped. ILLINOIS.

ANSWER.—The most common means used to prevent swarming is called shaking a swarm. Look through the hive every week or ten days, and when you find queen-cells started take away all brood but one. The brood taken away may be used to strengthen weak colonies, or wherever it will do most good. If you want it to make a new colony, you must take with the brood enough bees to keep the brood from chilling. It may be better to leave the brood for a week or ten days over an excluder, leaving the queen with her one brood below the excluder.

It may do no harm to mention that a satisfactory way of preventing swarming has been one of my most difficult problems, and it may be profitable for you to study the different plans I have tried, as given in my book "Fifty Years Among the Bees."

Swarming

1. I hived a swarm of bees about June 6. Will those bees build queen-cells soon and is it likely they will swarm?

2. After my bees quit swarming and I know that my bees have queens, would it be all right for me to cut the queen-cells out, and if so, would the bees build them again soon?

3. Is a queen and drone trap successful or not, and when a swarm issues will they hang on the hive outside or will it cause them to go back in? ILLINOIS.

ANSWERS.—1. Having sent out a prime swarm June 6, it would be nothing strange for a second swarm to issue about eight days later, and if they didn't swarm within 16 days you would not expect any afterswarm. The colony is not at all likely to start cells or to swarm again. The swarm may start cells for superseding, out not for swarming.

2. There will be no need to cut out cells in the old colony, and to cut them out in the swarm would only interfere with superseding the queen.

3. A trap will catch the queen, and so prevent the swarm from leaving, but if left on more than two weeks or so after issuing of the prime swarm it would hinder the young queen from going on her wedding trip, and so bring disaster to the colony. Yes, when the queen is caught in a trap upon the issuing of a swarm, the bees are likely to hang out if the weather is hot.

Replacing the Queen

1. I bought from a queen-breeder a queen as advertised by him, and the drones are very dark, some having only one band, and none are light like Italian drones I have seen before.

2. On June 26 I found the queen dead on the entrance-board. On examining the

frames in two days I saw three nice large queen-cells, so I did not send for a queen. What, in your mind, caused the death of the queen? She had done fine.

3. I got a two-frame nucleus and have taken two one-frame nuclei away for increase, and they (the parent hive) have filled nearly half a super now and no queen since June 26 until today a virgin will hatch. Is that very good?

4. Now, if this virgin mates with these dark drones will the bees be three-banded like the ones from the dead queen (she proving to be purely mated)?

5. There are black bees one-half mile away (bee line). Will they be as apt to mate with my queen as one from my own yard? NEW YORK.

ANSWERS.—1. You cannot judge by the drones. Some of the best Italian stock may have dark drones, especially if they be of the leather-colored variety that so many prefer. If the workers show the three yellow bands, it doesn't matter about the color of the drones. The queen also may be quite dark, so long as the workers are all right.

2. I don't know. It is just possible that she was in some way injured the last time previously that you opened the hive, or that the bees balled her on that occasion, a thing that sometimes happens.

3. You did well, and yet the loss of the queen would show more later on.

4. Yes, I would expect the worker progeny to be three-banded.

5. There is a likelihood that at least half of your virgins will meet your neighbor's drones.

Leather Colored—Three Banded

I would like to know the difference, if there is any, between the leather colored and the three-banded Italians? MINNESOTA.

ANSWER.—The name "leather colored" applies to that type of Italians whose workers are of a hue somewhat like leather that is tanned without being colored. Their workers are three banded as well as the workers of the light-colored Italians.

Introducing a Queen-Cell

I will explain to you the circumstances that lead to the question: I had a very strong colony with a mated queen. She was on a frame when I shook the bees off. I noticed her down on the bottom-board a few minutes later. She was drawing her abdomen in and out, giving her the appearance of panting. Ten days later she was not to be found, there were no eggs or unsealed brood, and the cells had been started, so that I considered the colony queenless.

I destroyed the cells and put in a frame of brood that had a nice cell on it. This frame had been raised above the excluder in my best colony, seven days before. Ten days later there was a big swarm cast at 2:30 p.m., and another one at 4:30 p.m. They were looked for, but not found. I looked through the hive and found a queen, evidently young, judging by her speed and shyness, also two more cells, which I cut out. Now, I am wondering how to account for two swarms and a queen left, also whether it is ever safe to requeen a strong colony by giving a cell. You speak of this condition on page 108 of "Fifty Years Among the Bees," but I don't think you quite answer this question there. Would all have been well if the cell had been on brood that had been ten days above the excluder instead of seven, or would they have swarmed anyway? NEW YORK.

ANSWER.—It is fairly safe to introduce a queen-cell into any colony which is queenless and has no unsealed brood. I say "fairly safe," because it occasionally happens that when the virgin goes out on her wedding trip the bees swarm out with her, and some have reported that she does not always return.

The cell you gave was on a comb that had been over an excluder seven days. In all probability the comb contained brood in all stages down to eggs that had just been laid

at the time the comb was put over the excluder. So there would be present brood not more than four days old, young enough to be changed into queen larvae, even though a four-day larva will not produce a queen of the best grade. Nothing strange, then, that a strong colony with several young queens should do some swarming. If the comb has been over the excluder ten days, as you suggest, possibly if only eight days, there would have been no trouble.

One-Half Story Hives

1. I am in a locality with an intermittent flow and a long season with conditions such that all early swarming colonies will prepare and swarm again in about five or six weeks, as will the parent colony; also the natural increase is about four to one regardless of adding comb-honey supers.

I am using 8-frame hives (too small undoubtedly for this vicinity). An article in June 1st Gleanings outlines what seems to be an ideal plan, using 1½ stories as a permanent brood-chamber, this being equivalent to 12 frames regular.

It seems that where colonies naturally swarm twice and construct three new sets of combs with a surplus, one could easily maintain a 1½ story brood-chamber manipulated as described with less swarming and more surplus and less manipulating. Would the depth be detrimental to securing section honey, and what has been your observation with a 1½ story permanent brood-chamber?

2. In a recent answer to questions in the American Bee Journal, you mention doubling up on swarms, hiving the second, third and fourth swarms with the first. What about the queens in this case? Do you mean to run in the swarms, queen and all on a previously hived swarm, or should the queen in the hive be killed before hand? BEGINNER.

ANSWERS.—I have not experimented with 1½ story hives, but would not expect any difficulty with supers for either comb or extracted honey over the hives of such depth. It may do no harm for me to suggest that if you do not care to procure the half stories you can accomplish the same end by using two full-depth eight-frame stories, having only four frames in the lower story, using dummies in the vacancy. You could also experiment to see whether you would like five frames in the lower story better than four.

2. Yes, no attention is paid to the queens, they can settle their differences to their own satisfaction. It might be mentioned that sometimes an afterswarm is returned to the parent colony as often as it swarms. If an afterswarm is hived in a hive or box, and returned to the old hive 24 hours later, there will generally be no swarming. For when the swarm is kept separate for 24 hours, or even over night, the likelihood is that all virgins in the cells in the old hive will be allowed to emerge, and they will fight until only one is left.

Bee House—Cypress Lumber

I am starting into the bee-business for the second time with frame hives. I have a beautiful little grove not far from the house, say 150 steps with 16 acres pasture in front and a clear running spring and fresh cool water not far distant. I have only three colonies now, but want to increase to about 25 or 30, and I would like to put my bees or my hives in this little grove, but that would mean no honey for me, for men and boys steal honey here.

Now what I want to ask you is, can I keep my bees in a house? Can I put up a house say 12x20x8 feet and leave a hole just in front of each hive for a bee entrance, say ¾x6 on the south side of the house, and on the inside have my hives side by side, so no bee can get in from outside; have alighting-board outside 5 or 6 inches wide all along the side, just under the bee entrance, and it covered over with a plank a foot wide and only about 4 or 6 inches above the alighting-board, all painted nice and good. Then have holes at the top of the wall for bees to

American Bee Journal

escape from house when I would be taking honey from supers. The balance of the house I could use for work and store-room. My hives would then be in the dry at all times, no damage from rain or hot sunshine, and honey and all under lock and key. Besides, I would have a nice and clean house for all things pertaining to beekeeping, all sealed up bee tight. Would a house built this way be practicable, and could I have a row of hives on the north side of the house the same as south side? I would prefer them kept out in the shady grove but for robbers. Could have plenty of light from windows in east end and on north side of house.

I have some cypress timber and there is a sawmill near at hand. I aim to have enough timbers sawed into plank suitable for making brood-chambers and supers.

Don't suppose there is more than 250 or 300 colonies in this county. After this year I aim to buy queens. Will you tell me about cypress lumber for hives and supers, and give sizes of hives and supers inside and outside measurements, or would it be best for me to buy one eight-frame hive and one ten-frame hive? I have eight-frame hives.

What length should I have saw stocks cut at stump, so I would have no loss, or the least loss from cutting sides and ends?

IGNORAMUS.

ANSWER.—Yes, you can keep your bees in a house as you propose, the entrances being so arranged that through them the bees can get into the hives from outdoors, but can never get into the house except when the hives are opened. I am afraid, however, that you would change your mind about such a house being nice and cool in a hot summer day. A good many years ago such houses were advocated quite strongly, and some still advocate them, but most have given them up.

You seem to want a house to keep your hives safe from thieves, and I cannot help wondering why you do not keep them close to your house instead of 150 steps away, for that distance would cut no figure with the bees, and it would be inconvenient for you to go that distance.

Cypress lumber is all right for hives, but I am afraid I don't know enough to answer your questions as to measurements. Although I have put together a great many hives, I know little about measurements, having bought the stuff from the factories as a matter of economy. You will do well to have at least one hive as a model to pattern after.

Pollen

When a frame is full of pollen and the bees have no use for it, what should be done with it? VERMONT.

ANSWER.—Generally the best thing is to leave it in the brood-chamber for the bees to use out as they want it. I don't know, but I think that when bees have a stock of pollen on hand they gather less. I have known pollen to be cleaned out of combs put in the extracting chamber. It is possible that there are places where the bees store more than they can use, and then there may be nothing better than to melt up the combs.

Hiving a Swarm

As per instructions you gave me in the April number of the American Bee Journal, I have transferred the first colony that swarmed.

During the three weeks waiting for the brood to hatch, none of the bees seemed to go to the new hive, all remaining with the old one. Yesterday I drove them out into the new hive, putting the queen in, too; today they are quiet. The old hive had quite a lot of young brood, but not much honey. Did I do anything wrong? ARKANSAS.

ANSWER.—I am a bit puzzled to understand the case. You say the bees remained with the old hive during the three weeks waiting—something unusual. It is explained,

perhaps, when you say that at the end of the time you put the old queen in the new hive. If the old queen was in the old hive all that time, it is no wonder the bees clung to it, the only wonder being that any bees at all would stay in the new hive. Ordinarily the old queen would be with the swarm at the time of hiving, and I don't understand how

you managed to leave her in the old hive. Also the brood would ordinarily be all hatched out at the end of three weeks, but you found brood present, a thing not at all strange if the old queen remained in the old hive. The likelihood is that the queen will be with the swarm in your future experience when all will be straight.

REPORTS AND EXPERIENCES

Poor Crop

The honey crop in this section of the State is a complete failure, and some are having to feed. ELZIE L. BEE.

Cowen, W. Va., July 25.

Crop Poor

The honey crop is short in this part of the State, owing to dry weather and cool nights. No late rains to keep the flowers going. There were lots of flowers, but they did not seem to have the nectar, and the weather was too cool for bees to work good. We hope for better conditions next year.

Otay, Calif.

W. A. BALES.

Foundation in Full Sheets

The first article in July American Bee Journal on "Full Sheets of Foundation," has been read, re-read, and read again. The advice is good, not only for the brood-frames but for the sections as well.

Tests are made for the benefit of the State Board of Agriculture of Connecticut for at least eight seasons and by 20 or more beekeepers. The question was asked at one of the State Board meetings: What is the

one-fourth of the space. We agreed that an average of 40 pounds might be expected per hive, at 16 cents per pound or \$6.40 per hive. One-fourth of that or the crop of one colony in four is lost by this excess of drones. With this amount you can readily buy sheets of brood foundation at 10 cents each for 64 frames, or enough for 6½ hives. This argument made an impression at first sight.

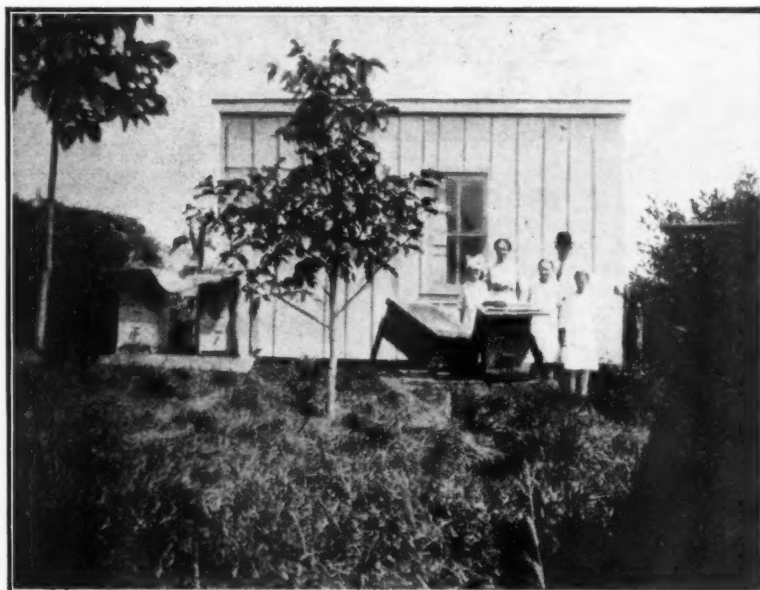
The following year, at least 20 beekeepers reported having tried it on half of their swarms. Those colonies on full sheets averaged one super full of honey, over the hives hived on 1½-inch starters. That was the first year.

At least 20 beekeepers tried this from 1883 till 1894. One man stated, at the end of the fourth season, that each full sheet of foundation he used saved him 50 cents in value of product increase.

Some of the readers may say that there is another side to this question. Well, ask the bees to answer for you. They will answer it readily and truly. In Dr. Miller's hives, I am sure the deficiency of drone-cells counts something in his big yields. All this matter may be proven by the bees themselves.

Woodbury, Conn. HENRY L. JEFFREY.

[It is necessary that we should correct a slight error in the foregoing letter. As the cells of the bees are hexagon, the number of



HIVES AND EXTRACTING HOUSE OF F. A. WICKLEIN, AT PERCY, ILL.

most profitable size of foundation starter in either brood-frames or sections?

My answer was: A starter is too expensive. I cannot afford to use less than full sheets. I was asked to prove it. My reply was that four drone-cells to the inch make 16 to the square inch; five worker-cells to the inch make 25 to the square inch. Every 32 drone-cells may be displaced by 50 workers. Thirty-two consumers rob the apiarist of 50 producers. Often the drone-comb occupies

cells to the square inch is greater than the square of 4 or the square of 5. Drone-cells in reality number about 18 on each of the comb, for each square inch. Worker-cells number a trifle over 27 on each side or nearly 55 for both sides of a square inch of comb. This does not diminish in any way the argument of friend Jeffrey. It rather emphasizes

American Bee Journal

the argument made. For proper measurement of cells see the Langstroth-Dadant "Hive and Honeybee," page 103.—EDITOR.]

Good Crop

We have one of the old time honey seasons. Bees are swarming plentifully, as the hives are crowded with bees and honey. White clover is more plentiful than it has been in this section in the 31 years that we have lived in this western country. Our bees wintered with very little loss.

Lenexa, June 18. MAX ZAHNER, SR.

Wintering on Aster Honey

A correspondent who signs himself "Doctor Smoker," under date of December, 1915, reports that he has lost two colonies out of 12, and he attributes this loss to unripened aster honey. During the winter of 1914-1915, my bees subsisted on honey gathered in the late autumn—aster and Spanish-needle. It is claimed that bees will work on goldenrod; yes, indeed, they do here, if there are no asters.

Your valuable magazine requested reports on this subject; for this reason and not to dispute what brother "Doctor Smoker" said, I am making this report of my observations on aster honey as winter food. I have three hives under observation. When I prepared them for winter there was an abundance of capped and uncapped honey in the hives. I did not open any hive until last Sunday, March 5, and found brood both capped and in larval state. I may mention that the temperature during this last month was as low as 12 degrees.

FREDERICK BENDER.

Nashville, Tenn., March 12, 1916.

Beekeeping in Japan—A Correction

Reading the article of Mr. Stuart, page 204 of the American Bee Journal, I am sorry to find some misinformation in it.

It is true that we mostly use American hives, but not only Italian bees, as there are some foreign races, viz., Carniolan, etc., and Japanese native bees in Japan.

It is true that the "rape plant" is one of the principal sources of commercial honey in Japan, but the "genge" plant is more common, and the same may be said of the Japanese clover, which is mentioned under the name of "Louisiana," page 204 of the American Bee Journal. The rape is for small plantations, and blooms in a rather early period for the bees; on the contrary, the "genge" is planted in most parts of the country and blooms in favorable season, in May. So the latter is the principal crop.

At present, "the industry is still in its infancy" in Japan, but we are going into the honey business with our characteristic energy and thoroughness, as the Editor said.

Tara, Gifu-Ken, Japan. Y. HIRATSUKA.

Wintering

Mr. Swensen's way, pages 413-4, December, 1915, is good; but one thing I do not like is that the sun cannot strike the hive to warm the bees which causes them to take a cleansing flight on warm days. My plan is similar, but I take out the front part of the box so that the sun can strike the full entrance of the hive and cause the frosty walls of the hive to get warm and melt the frost which cannot leave the hive until a certain temperature is reached.

The sooner the sun can strike the hive the sooner the frosty vapor will melt away; but by Mr. Swensen's plan the sun must first warm the outer box, and before the warmth of the sun gets through the wall of the box and packing of straw or leaves, the warmer part of the day is over. I always have my hive lower at the entrance than at the back, so the melted vapor can flow out at the entrance. I have wintered my bees in this way for seven winters, and they are always strong and ready to work when spring comes.

HENRY F. CARRILLON.

Highland, Ill.

Preparing for Winter

A part of my apiary and the extracting house, which is situated on the north, is shown in this picture. A trellis of semi-evergreen honeysuckle runs along the west and north side of the apiary to check the cold winds in winter—a good wind break.

I winter on the summer stands with sealed covers. I place some paper or burlap on

top of the hives, then put on paper roofing; fold it around the hive and tack it down with small nails. So far I have not lost any colonies during winter in the eight years of beekeeping except one that had its entrance clogged with snow and ice and smothered the bees.

During the hot summer days I protect my hives with shade-boards and burlap, as shown in the photograph. I produce extracted honey exclusively, using the shallow extracting supers, our main honey flow being in the fall, and it has never failed in the eight years that I have kept bees. I had about 1400 pounds of fall honey last year from 18 colonies.

I don't see how some people can keep bees and be without any bee journal or text book on bees. Before I had bees I did not know a thing about them. It was in the year 1907 when a neighbor offered to give me a swarm, saying he had more than he needed. I accepted his proposition and at once subscribed for several bee journals, and got a few text books on bees. Now I have 18 colonies and have had good success with them, while my neighbor is just about out of business, being one of those who knows everything about bees without reading any bee literature.

Percy, Ill.

F. A. WICKLEIN.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.]

BEES AND QUEENS.

PHELPS' Golden Italian Queens will please you.

GOLDEN QUEENS for sale, 55 cents.
A. D. Keene, Bunkie, La.

FINE three-banded Italian queens. Circular and price list free.
J. L. Leath, Corinth, Miss.

FOR SALE—White clover extracted and comb honey. Henry Hettel, Marine, Ill.

DOOLITTLE & CLARK's untested queens \$1.00 each; \$5.00 for 6; per dozen, \$50.00.
Marietta, N. Y.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook, 1A1f 84 Cortland St., New York City.

TRY my very best tested Caucasian, Italian queens at 75c each; hybrids at 25c each. Peter Schaffhauser, Havelock, N. C.

FOR SALE—From 40 to 60 colonies of Italian and hybrid bees. All in good shape.
B. A. Manley, Milo, Iowa.

FOR SALE—200 colonies of bees; first-class location. Rosedale Apiaries.
J. B. Marshall & Son, Big Bend, La.

PLACE your order early to insure prompt service. Tested, \$1.25; untested, \$1.00. Italians and Goldens.
John W. Pharr, Berclair, Tex.

GOLDEN ITALIAN QUEENS, no better honey gatherers anywhere at any price. Untested, \$1.00. Tested, \$1.50. Wallace R. Beaver, Lincoln, Ill.

NORTHERN-BRED Italian queens of the E. E. Mott strain. Unt. queens, 75c. July and on. Send for free list. Earl W. Mott, Glenwood, Mich.

THE best Italian queen that can be had, \$1.00; 6 for \$5.00, June to November.
J. W. Romberger, 3113 Locust St., St. Joseph, Mo.

FOR SALE—Bright Italian queens at 55c each, or \$5.00 per dozen. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

THREE-BANDED Italian queens. Prices: One, 75c; 12 for \$8.00. Tested, \$1.25 each. Write for prices on nuclei and full colonies.
J. F. Diemer, Liberty, Mo.

ITALIAN QUEENS that produce hustlers. Nothing but select queens sent out. Untested, \$1.00; \$5.00 per dozen.
A. E. Crandall & Son, Berlin, Conn.

FOR SALE—300 to 600 colonies of bees, in the famous Hagerman Valley where failure is unknown; very reasonable. Address:
J. E. Hanks, Hagerman, Idaho.

BRIGHT ITALIAN Queens at 60c each; \$6.00 per doz; \$50 per 100. Safe arrival and satisfaction guaranteed.
W. W. Talley, Rt. 4, Greenville, Ala.

PHELPS' Golden Italian Bees are hustlers

VIGOROUS prolific Italian queens, \$1.00; 6, \$5.00. My circular gives best methods of introducing.
A. V. Small, 2302 Agency Road, St. Joseph, Mo.

GOLDEN Italian queens, select tested, \$1.25. Tested, \$1.00. Untested, 60c; 12, \$7.00. Select untested, 70c; 12, \$8.00. No foulbrood.
D. T. Gaster, Rt. 2, Randleman, N. C.

LEATHER COLORED "Nutmeg strain" of queens, \$1.00; doz., \$10. Tested, \$1.50. Special price on large lots. Return mail.
A. W. Yates, 3 Chapman St., Hartford, Conn.

WANTED—Every lb. pkg. shipper to quote me his lowest possible price on 50-lb. pkgs. with queens, to be shipped about May 20, 1917.
W. L. Lovejoy, Clarkston, Mich.

GOLDEN and three-banded queens. Choice untested queens at 50c; 100 for \$40. Dr. Miller's strain. Untested, 75c; 25 or more at 60c. The Stover Apiaries, Mayhew, Miss.

A LITTLE AD in our classified columns will sell that perfectly good equipment that you no longer need. Only 15 cents per line each insertion.

"QUEENS OF QUALITY" reared from a daughter of one of Dr. Miller's famous queens, \$1.00 each by return mail. After July 1st, 75c each; \$8.00 per doz.
J. Ivan Banks, Dowlstown, Tenn.

FOR SALE—500 colonies of bees; 200 colonies operated for comb honey. Apiaries are located in the famous Snake River Valley.
Gem State Apiaries, Box 67, Rigby, Idaho.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

CHOICE Italian, Carniolan or Caucasian queens. Untested, 75c. Tested, \$1.25. Breeding queens, \$2.50. Virgins, 40c each; 3 for \$1.00. C. W. Finch, 1451 Ogden Ave., Chicago, Ill. Phone Haymarket 3384.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, \$1.00 each; Tested, \$2.00; Breeders, \$5.00 and \$10.00.
2A1f J. B. Brockwell, Barnetts, Va.

FOR SALE—Good Italian queens, untested 75c; tested, \$1.00; nuclei, 2-frame, \$3.00; 1-lb. package, \$2.00; 2-lb. package, \$3.00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon, 1904 Park Ave., Little Rock, Ark.

FOR SALE—250 colonies of high grade Italians; fine location on virgin alfalfa at a bargain. New modern equipment, comb and extracted. New country, fine climate, and bee business developing rapidly. Splendid opportunity for energetic man.
A. W. F. Lee, Cordell, Okla.

FOR SALE—Three-banded Italian queens and bees from the best honey-gathering strains obtainable. Untested queen, 75c; 6, \$4.25; 12, \$8.00. Tested queens, \$1.25; 6, \$7.00; 12, \$12. For select queens add 25c each to above prices. Queens in quantity lots or bees by the pound, write for prices.
Robt. B. Spicer, R.F.D. 181, Wharton, N. J.

American Bee Journal

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, \$1.00; six, \$5.00; Tested, \$3.00; Breeders, \$5.00 and \$10. C. W. Phelps & Son, 3 Wilcox St., Binghamton, N. Y.

GOLDEN ITALIAN QUEENS by June 1st. Untested, 75c or \$4.00 per half doz.; \$8.00 doz. Select untested, \$1.00. Tested, \$1.25 each or \$7.00 per half doz.; \$12 a doz. Breeders, \$3.00 to \$5.00 each. Purely mated guaranteed. Send for circular. J. I. Danielson, Rt. No. 7, Fairfield, Iowa.

CARNIOLAN, golden, and 3-banded Italian queens. Tested, \$1.00. Untested, 75c; 6, \$4.20; 12, \$7.80. 1/2-lb. bees, 75c; 1-lb. \$1.25. Nuclei, per frame, \$1.25. No disease; everything guaranteed. Write for price list. C. B. Bankston, Buffalo, Leon Co., Tex.

An established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, \$1.00; 6 for \$5.00; 12 for \$9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

GOLDEN Italian Queens bred strictly for business that produce a strong race of bees as honey gatherers. Untested 75c each; 6 for \$4.25; 12, \$8.00. Safe arrival, prompt delivery, and satisfaction guaranteed. L. J. Dunn, Box 338, J. R. R. 6, San Jose, Calif.

GRAY CAUCASIANS—Early breeders; great honey gatherers; cap beautifully white; great comb builders; very prolific; gentle; hardy; good winterers. Untested, \$1.00. Select untested, \$1.25. Tested, \$1.50. Select tested, \$2.00. H. W. Fulmer, Box 10, Andalusia, Pa.

QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, \$8.00; Select, \$1.00 each; dozen, \$10. Tested Queens, \$1.25; dozen, \$12. Safe arrival and satisfaction guaranteed. H. C. Clemons, Rt. 3, Williamstown, Ky.

MY THREE-BANDED northern-bred pure Italian queens must be seen and tried to be fully appreciated for hardiness and honey gathering qualities, etc. Give me a trial order. My prices for August and September. Untested, 80c. Select untested, \$1.15. Select tested, \$2.50. Fay L. Barber, 200 State St., Lowville, N. Y.

FOR SALE—Pure Italian bees with tested queen, \$4.50 per col.; cols. with mated queens, \$4.00 each; light colored hybrid cols. with queen, \$3.50. All from the J. P. Moore's strain and in 8 frame hive bodies in winter cases, standard full depth self-spacing Hoffman frames, 8 to each hive. All combs straight, strong and healthy with plenty of honey, f. o. b. here. 1/2-lb. package wire cages without queens, one, \$1.50; 2, \$2.00. If queens are wanted add price of queens to package. Untested, 85c. Tested, \$1.50. Breeders, 3.00 to \$5.00. Wilmer Clarke, Earlville, Mad. Co., N. Y.

HONEY AND BEESWAX

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co., 6A12t 173 S. Water St., Chicago, Ill.

COMB HONEY our specialty. Highest market prices obtained; prompt returns made. Send us your shipments. Albert Hurt & Co., New Orleans La.

HONEY FOR SALE—New clover honey in 60-pound cans, 9c per pound. Comb honey, No. 1 to fancy, \$3.50 per case; No. 2, \$3.00 per case of 24 sections, six cases to carrier. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Raspberry, basswood, No. 1 white comb, \$3.00 per case; fancy, \$3.25; 24 Danz sections to case. Extracted, 120-lb. cases, 9c per lb. W. A. Latshaw Co., Clarion, Mich.

WANTED—COMB HONEY—Fancy and No. 1 qualities; 4 1/2 x 1 1/2 inch sections preferred. Also white extracted honey, carload or less quantity. Hoffman & Hauck, Richmond Hill, N. Y.

To exchange 500 B. Hoffman frames for good ex. clover honey or offers. Address, H. O. McElhany, Vinton, Iowa.

SUPPLIES.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog. A. E. Burdick, Sunnyside, Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co., 4A1f Greenville, Tex.

WANTED—10-fr. bottom-boards, extracting and comb supers; extractor for jumbo frs.; winter cases, and any equipment that will fit 10-fr. jumbo hives; also bees in lb. pkgs. with queens. W. L. Lovejoy, Clarkston, Mich.

FOR SALE—Medium brood foundation, one to ten lbs., 52c per lb. Up to 25 lbs., 50c. Up to 50 lbs., 48c; 100 lbs., 48c, prepaid in Louisiana. Root's goods for sale. Beeswax wanted, 26c cash, 27c in trade. J. F. Archdekin, Bordelonville, La.

WORK INCENTIVE—In long, good seasons spring-weaklings' yields equal strongest. Why, unless tiering-up destroys work incentive? Quin-compactness Hives every super adjoins brood-nest—incentive always there. For printed matter, address, Wm. F. McCready, Estero, Lee Co., Fla.

HONEY LABELS

HONEY LABELS that have broken away from the all-look-alike bunch. Made to suit your ideas. Lowest prices. Samples FREE. Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

MISCELLANEOUS

PRINTING FOR BEEKEEPERS—Noteheads, envelopes, cards, tags etc. printed and postpaid. 1000 of either, \$2.15; 500, \$1.30; 250, 95c. Fine stock and cuts used. Lowest prices in the United States. Complete line of samples and price list free. Rennecamp Printing Co., McKees Rocks, Pa.

HONEY AND BEESWAX

CHICAGO, Aug. 17.—The new honey from the harvest of 1915 is appearing on the market. No sales have been reported.

Comb is being held at 13c per pound for the best grade. Owing to the warm weather that has prevailed during the past four weeks that would have a tendency to prevent any activity, so that at this time it is difficult to diagnose the conditions, especially as to what the price is going to be this coming month. Yet, indications are that there is not going to be much, if any, advance over that which has been obtained for the product of 1915, a goodly quantity of which is yet unmarketed.

Extracted also remains quiet at from 7@8c per pound for the white and ambers at from 5@7c per pound.

Beeswax is steady at 28@30c per pound, according to color and cleanliness.

R. A. BURNETT & Co.

KANSAS CITY, Mo., Aug. 16.—There is still quite a surplus of comb honey on the market. Strictly No. 1 white comb honey, 24 section cases is selling at \$3.25 to \$3.40 per case. No. 1 amber comb honey at \$3.00, and No. 2 amber comb honey at \$2.90 to \$3.00.

Strictly fancy white extracted honey is selling at about 8 1/2c a pound, and amber at 7 1/2c a pound. The demand for honey is only fairly good.

C. C. CLEMONS PRODUCE COMPANY.

SAN ANTONIO, Aug. 15.—In line with our prediction in the August number, would say that there is a distinct feeling of confidence in the minds of Texas honey producers and a perceptible stiffening of prices. Comb honey is reaching a basis of 9c f. o. b. shipping point and extracted honey 7c. The practical assurance of the forming of the

Texas Honey Producers' Association and the expectation of cooperative prices ruling in the future has had a tendency to make buyers more anxious for honey than sellers were for a market. Beeswax prices are still low, ranging from 25c cash to 27c exchange basis. SOUTHWESTERN BEE CO.

DENVER, Colo., Aug. 10.—We are selling new crop comb honey in the local market at the following jobbing prices: Fancy per case of 24 sections, \$1.38. No. 1, \$1.15; No. 2, \$2.03. White extracted, 8 1/2@8 3/4c per pound; light amber, 8@8 1/2c per pound, and amber 7@8c per pound. We pay 26c per pound in cash and 28c per pound in trade for clean, average yellow beeswax delivered here.

THE COLO. HONEY PRODUCERS' ASS'N
F. Rauchfuss, Mgr.

NEW YORK, Aug. 6.—There are no prices established as yet on the new crop of honey, comb as well as extracted. From reports we have thus far received it seems evident that a good crop of white honey has been produced in the eastern and middle States, whereas California reports a very short crop, especially so of sage honey.

The old crop is pretty well cleaned up with the exception of West India, which is arriving in large quantities, and there seems to be an unlimited supply.

We will not be able to tell or make you any quotations until next issue.

HILDRETH & SEGELKEN.

BEE SUPPLIES

At wholesale and retail. Dovetailed hives, Marshfield sections, shipping cases, and all kinds of small needs. Beeswax wanted. Prices for the asking.

W. D. SOPER

325 So. Park Ave. Jackson, Mich.

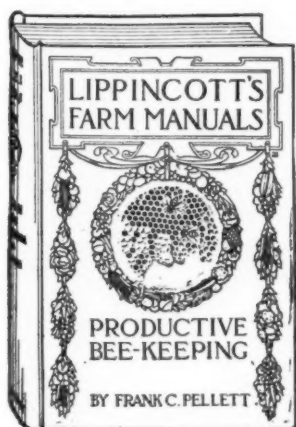
Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at \$1.00.

Langstroth on the Honey Bee—(Revised by Dadant.) The classic in bee culture. A 575-page cloth bound bee book brought up-to-date. It is an authority, and is used as a text book in many schools and colleges. Finely illustrated and well indexed. It is a book which should be in the hands of every beekeeper, large or small. Chapters are devoted to all important bee subjects from bee-anatomy to diseases and honey production and marketing. Price, postpaid, \$1.25, or with American Bee Journal one year, both only \$1.75. French edition of this book, price, postpaid, \$1.50. Spanish edition, postpaid, \$1.85.

The Big Ben Binder.—It has a stiff book outside cover with the name American Bee Journal printed in gold letters on the back. It is made to hold the issues of three years (36 copies). Makes reference easy and preserves copies from loss, dust and mutilation. Price, postpaid, \$1.00, or with the American Bee Journal one year, both for \$1.60, or given free as a premium for sending in two new subscriptions at \$1.00 each.

American Bee Journal

A BEE BOOK FOR THE PRACTICAL MAN IS "PRODUCTIVE BEEKEEPING," by Frank C. Pellett



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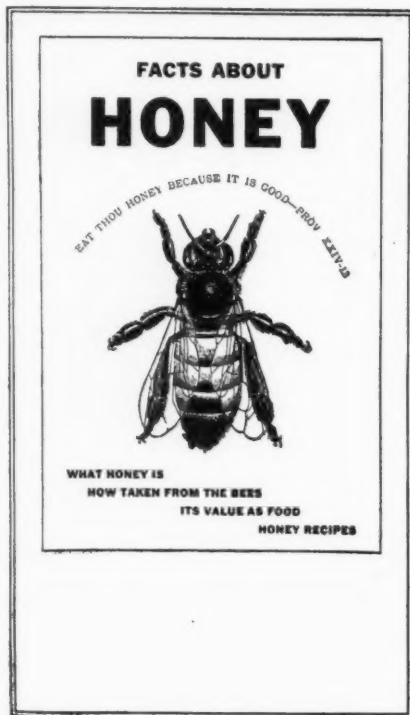
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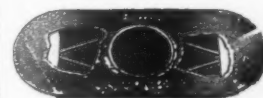
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